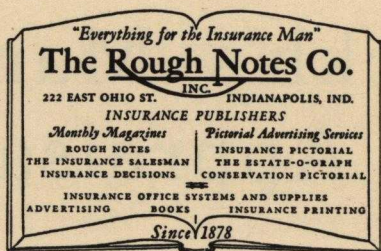


Ed. Gustafson
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Boeckh's Manual
of Appraisals



BOECKH'S

Manual of Appraisals

by

E. H. BOECKH

E. H. Boeckh & Associates
Appraisal Engineers

SECOND EDITION

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FOREWORD

IT IS AN impossible task to simplify the subject of appraisals beyond a certain point, and still maintain any semblance of accuracy.

Appraising in general may be divided into two concepts of value. The first of these we may term the physical value, based on a reproduction of the physical assets. The second phase is the economic side, presenting current money worth of these physical assets. There is often a wide spread between what we would have to pay for a completed property unit, and an actual reproduction of the property.

Appraisal work, like the property with which it is concerned, is subject to depreciation and obsolescence, and commences to lose its usefulness from the day it is first made. Three reasons for loss of usefulness are apparent.

The first and most important of these is variation in the unit of measurement, known as the dollar, by which we translate our appraisal into values. Due to price fluctuations, cost of a material or price of labor will vary from day to day and from town to town not many miles apart.

The second factor to be contended with is Depreciation, or loss of value due to the wearing out of those physical units that comprise a building.

The third factor is purely economic and is termed Obsolescence, the loss of value due to such causes as the going out of style of a property unit, and under or over improvement of a location, faulty construction or poor materials.

In the preparation of this Manual, we have endeavored to give it as wide and as long life as possible by the introduction of our Index Control methods, and thereby compensate for the fluctuation of the dollar unit of measurement for both time and place.

The set-up used for building costs has been made by extensive study on types and classification. In both smaller and larger types of properties, we have used the cubical measurement method, but giving due consideration to the square foot method as a corrective factor. Due to the large possible variation in all types of construction, we have endeavored to set a standard based on the law of averages of class, and to give possible deviations in construction with their prices, so that corrections may be made in the analysis of value.

Appraisals cannot be made by rule of thumb. Dozens of factors must be taken into consideration, including the question as to the use to which an appraisal is to be put. A valuation made for insurance replacement costs cannot be used for mortgage loan purposes. The former is made only with the thought

of reproduction in mind, while the latter must take into consideration the long term economic trends. Likewise, an appraisal made to determine manufacturing costs would not do as advice to a purchaser of the property. The appraiser must not only determine value, but he must determine the kind of value he is to render.

That experience is necessary for successful appraisal is obvious, but it need not be entirely the experience of the man making the appraisal. The science of valuation engineering is made up of collected data from the experience gained by scores of appraisers who have gone before, classified and reduced to rules.

E. H. Boeckh and Associates

The more than three thousand detailed appraisals represented by the schedules of base cubic foot costs in this Manual are based on full and complete appraisal data. Their calculation required months of work by the staff of E. H. Boeckh and Associates, Appraisal Engineers, even though the work was greatly simplified and shortened by the use of the Analytic System for the Measurement of Property Values, of which Major Boeckh is the originator, and which has been thoroughly tested in years of practical application by Major Boeckh and his associates, and by insurance and loaning organizations.

THE PUBLISHERS.

PART 1

**BUILDING APPRAISAL—
REPRODUCTION COST BASIS**

REPORT
BUILDING APPRAISAL
METHOD COST BASIS

Chapter I

APPRAISAL DEFINITIONS

APPRAISAL: The word "appraisal" means a process or method by which is derived an opinion of the value of property. It is also used to designate the result of such a process or method.

The words "property" and "value" carry a number of meanings, but they are here defined in a specific technical sense.

PROPERTY: The fundamental attribute of wealth (in its economic sense) is its usefulness; that is, the benefits which are derivable from it. Such benefits may be in various forms other than mere receipt of money, but they are all measurable in money. One who owns wealth possesses certain *rights*, which are simply rights to enjoy the benefits of wealth. It is the possession of these rights which constitutes *property*. These property rights are not material things but are merely abstract relationships, and may be included under the term *ownership*. Since past benefits are expired, *property consists only of rights to future benefits*.

In the field of real estate appraising a distinction is made between "property" in general, and "*a property*."

A *property* consists of all the rights to future benefits from a single ownership, or from a single ownership as a unit capable of use independently of other units under the same ownership.

Examples:

(1) *Land and building in single ownerships (fee simple).* Land and building combined constitute a property; neither the land nor the building alone is a *property*.

(2) *Land leased; leasehold and building in single ownership.* The leased fee constitutes a *property*, and the leasehold and building combined constitute another property, but neither the leasehold nor the building alone is a property; nor are the leased fee, leasehold and building taken all together a *property* but rather *two properties*.

(3) *A chain of motion picture theatres in single ownership (fee simple).* The entire chain, taken as a whole, constitutes a property; each individual theatre, as a unit, constitutes a *property*.

VALUE: Property has been defined as all the rights to future benefits arising from ownership. The *value* of a property is the present or discounted worth of these future benefits.

Depending on the nature of the property, the conditions surrounding it, and the use to which it is put, there are distinguishable three kinds of value: *Market Value*, *Investment Value* and *Service Value*.

Market Value: Those classes of property which are bought and sold in a competitive market are said to have a *market value*.

The legal definition of "market value" is "that price which a seller, willing but not compelled to sell, would accept from a buyer, willing but not compelled to buy." Market value is measured by comparison with market prices of comparable properties.

Investment Value: Those classes of property which produce or are intended to produce benefits in the form of net earnings are said to have an *investment value*. "Investment Value" is "the present worth of the earning expectancy." Investment value is measured by estimating the earning percent based in the risk involved.

Service Value: Those classes of property which have a value *to their owners*, arising from the future benefits which such properties are expected to produce for their owners, are said to have a *service value*. Service value, in the case of improvements or chattels, is measured by estimating depreciated reproduction cost.

Examples:

(1) An apartment building may have both a market and an investment value.

(2) A private dwelling may have a market value and a service value.

(3) An office building or a hotel may have an investment value without having a market value.

(4) A department store occupied by the owner, a club, church or hospital may have a service value without having either a market or an investment value.

Market value may be temporary, as in the case of a depressed or inflated market, or it may be *normal*. Under a given set of conditions market value will be a *going value* or a *liquidation value*.

Investment value is always a going value. When a property which has had an investment value ceases to be a going concern, there remains only a liquidation market value.

Service value, being a value to the owner, is useful only for insurance, condemnation, and accounting purposes; rarely for measuring the security for a loan.

Chapter II

APPRAISAL SYSTEMS AND THEIR USES

MOST appraisers are in a dilemma when it comes to selecting the method of valuation to follow. They strive for simplicity and they strive for accuracy—and they find that the two don't go together. Plainly there is a point beyond which no process may be simplified and retain reasonable exactness; but on the other hand there is a point beyond which further complications diminish the returns on the efforts put forth.

A man who walks around a building and says, "A place like that is worth \$7,000.00," has not made an appraisal. His method is the acme of simplicity, but the courts have held that a valuation placed without entering a building is not sufficient. The common practice of having property appraised by men apparently familiar with values, through their trades and professions, does not result in provable value, nor does it take into account the many factors which are peculiar to the science of appraisal.

Regardless of the method which the appraiser employs in his work, he should have a fair understanding of all other methods as well. Such acquaintance with other methods not only makes him better able to use his own, but also enables him to show those to whom he is rendering his service the reason why he has used this particular method or that particular method and how the work should be done.

In the modern science of property valuation three methods are in general use for determining property values:

1. Values based on an analysis of reproduction cost.
2. Values based on income, on capitalization of rentals.
3. Values based on comparison of similar properties.

Value based on income, the second general method of appraisal work, may be briefly stated as a valuation by capitalization of net income from the property. It is an important and valuable method for certain purposes, but presents many in-

tricate questions, with which every appraiser should be thoroughly familiar. It is discussed in detail in Chapters IX and X of this Manual.

Value by Comparison, the third general method, is probably more commonly used than any other. Its usefulness is great, but its apparent simplicity leads to many pitfalls for the unwary appraiser. It is thoroughly discussed in Chapter XI of this Manual, and should be studied carefully.

Value for Reproduction

To find the cost of reproducing a property, the first thought would be to make a detailed quantity analysis of the various elements entering into the cost of building, just as the contractor does in making his bid. For quick estimating and appraising, however, it has been found quite satisfactory to find an average cost, per square foot of floor space or cubic foot of contents, and apply this average cost against buildings of similar construction and size.

In making a detailed quantity analysis the appraiser is dealing with a subject that is definite in some ways and in others very indefinite. Before him stands the property upon which he is to base his estimate. It may have been just erected or it may have been standing for years, but the physical picture is definite.

The appraiser may count the bricks or he may use some other form of measurement to arrive at his conclusion of reproduction costs, but unlike the contractor, any question of labor troubles or bad weather does not play a part in his estimate. A good appraisal is based largely on the law of averages. The professional appraiser knows from past experiences of himself and others that it takes so much material and that it requires just about so much time in labor to perform a certain building operation and this is the type of information that he uses in the reconstructing of his assignment on paper.

But unlike the contractor, the appraiser has an economic problem, based again on the law of averages, known as depreciation and obsolescence. Here enters the indefinite phase of his work. The appraiser has scientific tables for depreciation and methods of charges for obsolescence, but their application depends largely on the appraiser's own individual judgment.

In using the simpler square foot or cubical contents method for arriving at reproduction costs, you first find the area or

cubical contents of the building; then determine the classification of the building: that is, determine its type of construction; and then select a cost factor that applies to that class of building.

Cost factors are usually found by averaging a large number of buildings. Frequently they neglect to make allowances for differences that occur in practically all construction, such as variations in size of building, differences in length of walls or the expanse of walls around a given ground area or given cubical volume, and especially the constant changes taking place in the prices of materials and labor, and in the value of the dollar.

The square foot or cubic foot method is obviously the quickest and most convenient method for finding reproduction costs. It is accurate for any one particular type of construction, for a building of a given size, for one particular time and one particular place.

Furthermore, it is possible, by calculating such cost factors for all types of buildings in all sizes and kinds of construction, and by providing methods for modifying these costs according to changes in prices, for the appraiser to make use of this quick, convenient and time-saving method, with results equivalent in accuracy to the detailed analysis method of arriving at reproduction costs.

The Boeckh Manual is designed primarily for the determination of Reproduction Costs and Present Sound Value, and is based primarily on schedules of Cubic Foot Costs. Complete and careful provision has been made for modifying these basic costs for all variations so that, in the hands of a careful appraiser, it produces results of remarkable accuracy.

Chapter III

BOECKH INDEX CONTROL

THE USE of index numbers as a means of determining variations of value is analogous to the use of thermometers to measure variations in temperature. Just as most people are able to distinguish, through their temperature sense, whether it is hot, warm, cool, or cold, so do most people have at least a rudimentary idea of "a high cost of living" or "a low level of prices." Very little idea is had, however, as to how hot or how cold it is or as to how high or how low the level of prices is. The thermometer was invented as the measuring device for temperature changes and the index number was invented to measure the magnitude of variations in the level of prices.

Index numbers of construction costs differ from most of the index numbers with which the reader is familiar, such as those representing the market price of stocks and bonds. The latter are usually applicable to the country as a whole, while the former apply only in specific territory where the building material prices and the labor rates from which they are calculated prevail.

Moreover construction cost index numbers differ with the type of building, because the quantities of the different building materials and the amounts of the different classes of labor differ in each type of building. For example, in a frame residence the item of lumber has more influence than the item of steel. In a steel frame factory building, steel has more influence than lumber. Since changes in lumber and steel prices do not have an exact mathematical relation, the index numbers for frame residences and steel frame factories would not vary in direct proportions. These factors have been taken into consideration in the calculation of the Boeckh Index Numbers.

An index number to be undebatable must be calculated from a formula which can be proven as accurate by rigorous mathematical tests and from data which is logical, comprehensive, and reliable. Fully cognizant of these requirements when the idea was conceived of introducing the index method of control into valuation services, it was only after considerable research and tested application to practical evaluations that we adopted our present method of calculating the Boeckh Index.

By logical data is meant an assortment of items which takes into consideration the locality to which the data pertains and the date for which the data is applicable. The index number of property values varies with different localities because the prices of building materials and the rates of wages vary in different

localities. Prices and wages vary also with time; consequently the date of the index number is important.

By comprehensive data is meant an assortment of items which is truly representative of the field covered and which gives due recognition to the degree of importance of each of the representative items, such as brick, lumber, structural steel erector's wages, etc. Even after a representative assortment of the various items has been made, unless an index number takes into consideration the relative importance of the various items, it is of little use. For instance, the cost of lumber in a structure of a certain type is greater than that of steel, then the items of lumber must be given greater weight in the formula for that type than the item of steel.

The derivation of the formula involves the application of mathematics more advanced than the mere calculation of an arithmetical or geometrical average of prices or price relatives. Since this derivation is complex and purely technical it is enough to say that the formula used in the calculation of the Boeckh Index gives results which are more accurate than those ordinarily required for statistical work.

All prices and costs given in this Manual are scientifically computed base prices per cubic foot of volume, arrived at by means of carefully worked out and proven formulas, at Boeckh Index Number 100. Each price accurately reflects the proportionate amount of labor and the various materials entering into the total cost of a specified type of building of given size—using as base 100 an average of prices in the United States for the years 1926-1929.

To convert the base reproduction cost of a building as found from the Manual into accurate, up-to-date local reproduction value, it is only necessary to apply the local Index Number, as a percentage.

This local Index Number is based on local prices of ten basic building materials and kinds of labor. The more up-to-date the figures used, the more accurate the local Index Number.

The ten factors of labor and material on which the Boeckh formulas are based are as follows:

	Prevailing Price
BRICK, common straight hard, per 1,000, delivered \$.....	
LUMBER, No. 2 common per 1,000 b.m., carload lots, F. O. B.:	
1-in.x6-in.x10-ft. to 20-ft.....	
(Short leaf southern pine; Douglas fir; western pine; spruce: Give price of type of lumber normally used.)	
2-in.x4-in.x10-ft. to 20-ft.....	

BUILDING COST INDEX NUMBERS

OF E. H. BOECKH & ASSOCIATES, INC.

Construction Costs Compared with United States Average Prices 1926-1929=100

	Residences		Apartments			Commercial and Factory Bldgs.				
	Frame	Brick	Hotels, Brick and Wood	Office and Conc.	Bldgs. Brick and Steel	Frame	Steel	Brick and Wood	Brick and Steel	Brick and Conc.
ATLANTA AREA										
1926-29 Average..	82.7	87.0	84.2	83.7	87.0	82.9	94.5	84.7	87.5	86.8
1933 (Average)....	64.6	69.6	68.3	77.9	76.1	62.7	79.5	71.8	79.0	82.0
1934 (Average)....	70.6	76.6	74.6	83.8	83.4	68.9	91.5	78.5	86.4	87.4
January, 1935	71.0	77.2	75.4	85.3	84.7	67.8	91.3	79.5	86.3	88.2
BALTIMORE AREA										
1926-29 Average..	107.2	112.0	107.6	100.6	100.7	106.3	95.5	106.8	96.8	101.2
1933 (Average)....	83.4	85.3	81.9	75.6	77.5	83.9	76.7	78.1	76.0	75.3
1934 (Average)....	83.8	89.1	86.2	89.9	88.5	81.5	86.9	89.1	88.5	91.0
January, 1935	82.1	88.3	85.6	91.2	89.9	79.3	88.6	89.4	90.0	92.4
BOSTON AREA										
1926-29 Average..	116.3	120.3	115.4	106.2	107.0	118.8	106.3	112.5	108.7	105.8
1933 (Average)....	93.8	91.2	87.7	93.7	89.3	84.7	92.8	88.9	94.9	97.3
1934 (Average)....	94.4	101.1	97.1	101.4	98.3	93.2	99.6	97.8	101.6	104.1
January, 1935	96.0	102.7	98.6	101.5	98.7	95.5	100.4	99.6	102.6	104.7
CHICAGO AREA										
1926-29 Average..	109.2	114.2	109.8	113.2	109.1	112.9	105.2	105.9	112.0	116.0
1933 (Average)....	98.8	102.3	96.8	98.4	94.0	103.4	94.2	92.2	98.8	102.2
1934 (Average)....	93.4	99.2	94.6	105.0	99.9	95.2	102.8	93.9	104.4	109.9
January, 1935	92.5	98.5	94.1	105.1	99.9	93.9	100.7	93.9	103.5	110.0
CINCINNATI AREA										
1926-29 Average..	100.5	105.0	101.3	101.0	100.2	100.2	99.6	103.1	100.6	101.0
1933 (Average)....	77.9	83.1	80.5	81.1	80.7	76.0	83.0	82.1	83.1	81.0
1934 (Average)....	87.6	93.1	89.9	92.3	91.1	86.0	92.3	92.3	92.2	92.9
January, 1935	89.5	95.0	91.9	94.3	92.9	87.3	93.8	94.7	94.0	94.8
CLEVELAND AREA										
1926-29 Average..	107.0	113.4	108.5	111.3	108.3	109.0	103.0	107.2	110.5	114.8
1933 (Average)....	91.8	97.8	93.4	93.7	89.8	92.8	89.4	93.6	94.4	98.3
1934 (Average)....	89.6	97.0	93.4	98.0	95.0	89.0	94.1	95.9	98.7	101.6
January, 1935	88.0	95.5	91.9	98.0	95.2	87.2	95.2	94.5	99.1	101.5
DALLAS AREA										
1926-29 Average..	112.8	115.8	111.0	102.2	103.4	114.7	104.6	106.7	103.1	102.4
1933 (Average)....	62.4	67.3	65.1	69.2	69.8	60.5	79.7	66.3	72.5	73.3
1934 (Average)....	86.2	91.6	89.3	88.1	89.3	83.7	95.7	91.5	92.4	87.5
January, 1935	83.9	93.0	91.7	90.7	91.4	77.4	96.1	100.7	96.4	90.2
DETROIT AREA										
1926-29 Average..	103.3	108.4	104.3	102.9	102.4	103.7	103.1	103.5	103.3	104.4
1933 (Average)....	80.2	86.1	83.1	86.6	84.4	78.9	87.7	83.1	86.8	90.2
1934 (Average)....	82.5	86.6	83.5	87.8	87.4	82.2	90.7	83.9	89.2	88.3
January, 1935	80.3	85.3	82.8	88.3	88.3	79.6	92.6	83.5	90.3	89.5

(Short leaf southern yellow pine; Douglas fir; western pine; spruce: Give price of type of lumber normally used.)

CEMENT, Portland, per bbl. carload lots, F. O. B. city, cost of paper bags included.....

STEEL, structural shapes, per 100 lbs., local price F. O. B. warehouse.....

COMMON LABOR, rate per hour.....

BRICK MASON, rate per hour.....

CARPENTER, rate per hour.....

STRUCTURAL IRON WORKER, rate per hour.....

PLASTERER, rate per hour.....

BUILDING COST INDEX NUMBERS

(Continued)

	Residences		Apartments			Commercial and Factory Bldgs.				
	Frame	Brick	Brick and Wood	Hotels, Office and Conc.	Brick and Steel	Frame	Steel	Brick and Wood	Brick and Steel	Brick and Conc.
MINNEAPOLIS AREA										
1926-29 Average...	92.8	98.2	94.6	95.6	96.1	92.8	100.0	93.9	97.9	98.4
1933 (Average)....	74.4	78.1	74.8	76.9	76.7	75.5	83.2	73.2	79.6	80.5
1934 (Average)....	87.0	94.0	90.9	86.8	87.4	84.2	89.5	94.8	89.1	90.5
January, 1935.....	84.8	92.9	90.1	89.1	88.5	80.7	91.1	95.7	90.5	94.2
NEW ORLEANS AREA										
1926-29 Average...	93.3	96.3	93.4	86.5	90.6	93.3	93.7	91.5	89.5	86.5
1933 (Average)....	61.2	66.9	66.0	72.8	73.5	57.1	81.6	69.5	76.0	73.7
1934 (Average)....	76.5	81.5	79.3	81.9	83.5	74.0	88.8	79.6	84.2	82.6
January, 1935.....	79.0	83.8	81.6	82.7	84.8	76.9	89.4	81.4	85.1	83.1
NEW YORK AREA										
1926-29 Average...	133.3	138.4	131.9	122.8	120.4	137.5	113.1	127.4	123.2	125.3
1933 (Average)....	85.0	92.4	88.4	101.1	93.3	85.2	90.4	91.0	97.6	106.2
1934 (Average)....	98.3	104.5	100.2	108.2	103.5	99.8	104.6	100.2	108.8	112.2
January, 1935.....	95.7	101.2	97.1	106.3	102.4	97.6	104.3	96.4	107.4	109.2
PHILADELPHIA AREA										
1926-29 Average...	100.3	107.6	103.7	105.9	103.1	98.1	96.3	106.2	102.2	108.8
1933 (Average)....	71.1	75.6	73.0	75.5	74.3	68.5	71.9	75.5	72.8	76.0
1934 (Average)....	84.8	91.0	87.6	91.2	88.7	82.4	81.9	91.6	87.6	92.5
January, 1935.....	84.1	90.2	86.5	90.9	87.9	81.5	77.2	91.4	85.1	92.4
PITTSBURGH AREA										
1926-29 Average...	113.3	118.8	112.8	111.2	107.1	115.4	89.6	112.2	104.5	112.9
1933 (Average)....	86.2	93.0	88.3	94.4	87.7	86.5	76.6	91.3	87.9	99.9
1934 (Average)....	83.7	91.1	87.7	86.9	85.1	80.6	73.4	93.3	82.9	88.4
January, 1935.....	84.2	91.8	88.2	87.5	86.0	80.7	74.1	94.3	83.8	88.9
ST. LOUIS AREA										
1926-29 Average...	118.6	121.1	115.7	109.9	108.8	121.3	103.3	111.7	107.7	109.3
1933 (Average)....	87.3	94.0	90.1	97.9	93.2	88.4	96.8	90.2	99.6	102.6
1934 (Average)....	97.6	105.5	101.7	105.9	102.3	97.2	102.6	103.7	107.6	109.7
January, 1935.....	95.3	103.7	100.2	106.1	101.5	94.4	102.9	103.1	107.7	110.0
SAN FRANCISCO AREA										
1926-29 Average...	87.7	93.7	90.4	97.5	96.5	86.1	95.5	91.8	95.9	99.0
1933 (Average)....	68.4	76.7	74.3	84.7	81.0	66.3	82.1	78.5	85.3	89.5
1934 (Average)....	85.0	93.2	90.5	97.5	94.5	82.9	97.2	94.7	99.3	102.4
January, 1935.....	84.3	92.0	89.6	99.2	96.5	81.8	100.6	95.9	100.8	104.9
SEATTLE AREA										
1926-29 Average...	84.5	92.2	89.2	101.7	95.1	82.4	100.8	92.2	100.5	105.9
1933 (Average)....	63.4	72.1	69.8	84.6	79.3	58.7	81.5	76.0	81.8	90.0
1934 (Average)....	78.2	86.5	83.8	95.2	92.1	74.9	97.1	87.9	96.2	100.0
January, 1935.....	82.2	90.2	87.3	100.7	96.9	79.6	101.1	90.8	100.9	104.6

These prices are easily obtained from any competent local contractor or building supply dealer. Convenient printed forms are supplied to users for noting and mailing in to the publishers, or to E. H. Boeckh & Associates. From this information Index Numbers are calculated, and sent to users, by return mail.

Index numbers for the various types of buildings and construction are shown for leading cities, calculated as of January, 1935, on pages 22 and 23.

An examination of these tables is most illuminating, showing the wide variations in building costs, between nearby cities in the same general area, and even more in the various sections

of the country. They show conclusively the great importance of the "locality" factor, in the determination of values and costs.

Moreover, a careful analysis of the table shows that there is no consistent relationship, as to construction costs, either as to the size of the city or the distance between cities, even though they may be only a few miles apart.

Construction costs are determined not merely by the simple factors of supply and demand; many other factors must be taken into consideration, including the effect of organization of the crafts, supply dealers, contractors and labor unions.

In some cities these fields are so well organized that construction costs are practically fixed by agreement rather than by free competition. The degree to which these factors influence costs in different cities is proportional to the strength of such organizations, rather than to the geographical location, or population.

Any change in the prices of any of the basic factors will of course affect the cost of building in some degree, depending upon the importance of that factor in the cost of the building under consideration. The user of the Manual who wishes to make accurate appraisals should check up frequently on local prices for these basic items, and whenever any material change occurs, secure a new local Index Number.

The importance of using only up-to-date and accurate local Index Numbers in making appraisals can hardly be over-emphasized. Here is the real heart of the appraisal; a change of as much as 5 points in the Index Number would make a difference of \$500 in the appraisal of a \$10,000 property, and on larger properties might amount to many thousands of dollars.

If an appraisal is to be made in a city for which no recent Index Numbers are available, the appraiser's first step, even before making his inspection, should be to secure the ten basic price factors, note them on the Index Number request form, and send it in to the publishers at once. Index Numbers will be calculated, and sent by return mail.

Chapter IV

HOW TO USE THE MANUAL

THE Boeckh Manual is designed to furnish the Present Sound Value of Buildings, that is, Reproduction Cost on the basis of building costs at local prices at the time the appraisal is made, less Depreciation and Obsolescence.

Cubic foot base prices have been calculated on 97 different types of buildings, on from three to six kinds of construction for each type of building, and for from five to twenty sizes of ground area for each type of building and kind of construction, a total of 3,369 cubic foot appraisals, covering every type of building, every normal kind of construction for each type, and a complete range of sizes for each type and kind.

These base cubic foot costs have been calculated on the basis of standard specifications, which are clearly stated. Following each schedule of Base Cubic Foot Prices is a schedule of corrective factors, showing charges or credits from the base price for deviations from standard specifications.

FIELD WORK

Work Sheets

A simple, carefully planned Appraisal Report is furnished to users of the Manual, to assist them in making inspections and appraisals. The use of this blank is advocated for accuracy, convenience and time-saving, but it is not essential. In these instructions for the use of the Manual, we will assume that the blank is being used.

Briefly, steps in the appraisal are as follows:

1. Measure dimensions of building, and calculate cubical contents.
2. Make a careful inspection of the building, checking on the Appraisal Report all features, and grading them for quality.
3. From the Report, determine the type, grade and size of the building and find Cubic Foot Base Price.
4. Compare Inspection Report with Specifications given for type of building and find Corrective Factors for deviations from standard.
5. Multiply cubical contents by corrected Cubic Foot Base Price; add corrective Flat Charges, to find Total Reproduction Value, at Boeckh Index 100.
6. Multiply this total by the local Index Number (as a percentage) to find Reproduction Value, at current local costs and prices.
7. Apply Depreciation and Obsolescence percentages (secured from conveniently arranged tables), to find Present Sound Value of Building.

8. Add, if required, Sound Land Value (see Chapter XII), to find total Sound Economic Value of property.

Measurement and Inspection of a Building

The process of making a valuation is divided into two parts: field work and office work. The field work process consists of observations and measurements made at the property. For handling the field work the appraiser should provide himself with a good quality fifty-foot tape, a six-foot folding rule, and suitably prepared blank forms or work sheets. The work sheets not only serve as a guide for field operations but form a permanent record of the property for future information.

The work sheet is arranged to allow making of a complete and systematic record of all features about the property which enter into its valuation. All the appraiser has to do in the field is to underscore or draw a circle around the words applicable to the particular condition he finds. The only writing that will be necessary while he is in the field will be the recording of quantities and dimensions and for noting peculiar conditions or features that might not be listed in the work sheet.

On the work sheet is a section cross-ruled for convenience in platting the outline of the building ground plan. It is advisable to assume that each division of the cross ruling represents one foot or some other convenient unit of length.

In measuring the building the appraiser should begin at one corner, measure the length of the wall surface with his tape and draw a corresponding line on the Cross Section Sheet, and not only plat it correctly but write in the feet and inches of length of this particular line. He continues this around the building, measuring and recording each wall, bay, porch, or other projection of the structure. Should the building be of irregular height or have different heights in its several sections the appraiser should indicate on his plat these heights in stories and in feet of these various sections.

Since the unit of cost as given in this Manual is based on the cubical volume of the structure, it is necessary that a fairly accurate cubical contents be obtained. This measurement should show the actual number of cubic feet contained within the exterior surface of the outside walls and between the lowest floor (basement floor) and the exterior roof surface.

Probably the most trouble will be found in measuring building heights, due to the variation in roof pitches. The American Institute of Architects has attempted to establish the following tentative rules:

For a flat roof, shed roof, or lean-to roof the appraiser will use an average in height between the highest and lowest point.

For gable roof buildings the volume should be computed as though the building were a cube up to the eaves. From the eaves up to the roof peak the appraiser will use one-half the height times the roof area in computing the cubical volume of the roof's space.

In hip construction roof buildings the appraiser will proceed as in the gable roof, using 45 percent instead of 50 percent in calculating roof volume.

In a gambrel roof the gross height should be taken to the point where the roof breaks.

In a semi-spherical dome roof the volume is found by using one-third of the diameter above the base of the dome.

For starting vertical measurements, the top of the basement floor is the beginning point. For unexcavated portion of building the beginning point is the top of the exterior wall footings.

Table of Standard Floor Heights

	Foundations or Footings Only	Base- ment	1st Floor	2nd Floor	3rd Floor	Blind Attic	Attic
Cottages—							
1 Story	2-ft.	.....	10-ft.	.....	.....	2-ft.	.....
1½ Story	2-ft.	.....	10-ft.	.....	.....	.....	5-ft.
2 Story	2-ft.	.....	10-ft.	9-ft.	.....	3-ft.	.....
Bungalows—							
1 Story .....	.....	8-ft.	10-ft.	.....	.....	3-ft.	.....
1½ Story .....	.....	8-ft.	10-ft.	.....	.....	.....	6-ft.
Residences—							
2 Story .....	.....	8-ft.	10-ft.	9-ft.	.....	3-ft.	.....
2½ Story .....	.....	8-ft.	10-ft.	9-ft.	.....	.....	5-ft.
Apartments—							
Cheap and Av. ....	.....	9-ft.	10-ft.	9½-ft.	9½-ft.	2-ft.	.....
Good and Exp. ....	.....	9-ft.	10-ft.	10-ft.	10-ft.	3-ft.	.....
Stores—							
Small .....	.....	9-ft.	12-ft.	10-ft.	10-ft.	2-ft.	.....
Large .....	.....	9-ft.	14-ft.	11-ft.	.....	2-ft.	.....
Office Bldgs. ....	.....	10-ft.	14-18-25	11-ft.	.....	.....	.....
Factories and							
Warehouses	3-ft.	10-ft. 12-ft.	14-ft.	12-ft.	12-ft.	2-ft. 3-ft.	.....

Points to be Noted in Inspections

(See also Appendix B, Construction Requirements)

In making field notations of conditions the following is suggested as a guide.

EXCAVATION: Two estimates are called for and should be noted under this heading, the percentage of area excavated to total ground area of building, and the percentage of depth of excavation to depth of basement. This information should be marked on the field plat.

FOUNDATION: The appraiser should indicate the type of foundation and also its thickness. Note the quality of material and workmanship, also try to determine, where you find footings only with no excavation or piers only, whether the footings are of sufficient strength and size to carry the structure. You should also note kind and quality of basement floor and any apparent defects such as lack of drainage, poor wall surface or wall-cracking of the walls.

WALLS: When the building has walls of two or more different kinds this information should be carefully noted so that the percentage of each kind may be determined. In brick or masonry walls the thickness should be determined and noted.

For frame construction determine and note the kind of siding. With

stucco note whether there is wood or metal lath base. With veneer be sure to determine the type of base or whether the veneer is set up with studding as backing only. Indicate the type of sheathing or kind of insulation if any is used.

STRUCTURAL FRAME: Indicate the kind of basement piers or columns or whether floors are supported by girders or partitions. Note whether beams or columns extend above the first floor level as they may do in buildings other than single residences. Pay particular attention to the joists, their sizes and spacing on centers and also note whether there are fire stops installed.

FLOORS: Make a note of the percentage or amount of different kinds of flooring if more than one kind is used. Make a record of floor construction, sub-floors, sound-proofing, and insulation, and whether the floor has been laid directly on the joists.

ROOF: Indicate the roof style, such as flat, hip, gable, etc., and indicate the type of construction, whether it is plain or cut up. Be sure to make a record of the pitch and of the number of dormer windows. Be sure to record the class and material or covering and each grade and quality.

INTERIOR FINISH: The appraiser will indicate the type of partition walls, their finish, and their plaster base. Also pay attention to the trim such as doors, window frames, sills, and mouldings, recording the type of material used and the workmanship under which it has been erected.

PORCHES: Note whether construction is in keeping with the main building, the kind of foundation floor, material, and workmanship, and the material used in the columns and roof construction. Also record the height in feet so that a hypothetical cubical volume may be determined later.

While a considerable portion of this information will not be used for pricing it is necessary for proper grade of the type of building—whether it is expensive, good, average or cheap.

Building Interior Construction

In the Manual classification of various type buildings a certain fixed proportion of built-in service fixtures, heating, and plumbing has been allotted under each base price. Where more or less of these items are found there must be an addition or deduction from the final price; therefore, the appraiser should record in his work sheet such special items as built-in service fixtures, fire places, mantels, the type or quality of heating systems, etc.

Under plumbing the appraiser should list all fixtures as to the grade, type, and kind of each fixture. Check this information with the Manual specifications.

Certain types of property have been allotted a certain amount of tile work for bath rooms and lavatories. This item should be recorded as to the approximate square feet of tile on both floors and walls and the type of tile used (if it be of high quality or poor quality).

Depreciation

While still in the field an appraiser should judge from his inspection of the property both the structural and interior conditions so that he can make his corrections for conditions on the depreciation tables. He should obtain the exact age of the property, which may be ascertained from the owner or occupant.

If not available there it may be necessary to inquire about the neighborhood and then estimate the age of the property. In large cities and towns the building age sometimes may be obtained from the County Appraisalment records in the office of the County Auditor.

MAKING THE APPRAISAL

To illustrate the actual application of the Manual, specimen Appraisal Report work sheets have been prepared, which are reproduced on Pages 30-31.

In picking the correct type of building from the Manual, the appraiser should use care in obtaining the correct grade of property, such as Expensive, Good, Average, or Cheap. For convenience of classification there is a *Grade Column* provided on the work sheet. The appraiser can check each item of construction during the course of his inspection. The column in which the greatest number of check marks appears, especially on important items, would naturally be the grade to assume for the building as a whole.

Some confusion may exist in the mind of the appraiser as to the proper classification of a building (Expensive—Good—Average—Cheap) because he is depending too largely on trying to fit the looks of a building to a picture in the Manual. It is recommended that the appraiser study the type classified and endeavor to fit it to the specifications rather than to the picture. By so doing, his work will be greatly facilitated.

He will then go to the Manual and find the type of property which most closely resembles the appraisal in question. In the present example it is found to be "Residence—Good—2 Story" (See Pages 76-77).

As the building now in question is of brick construction and contains 36,540 cubic feet, and a ground floor area of approximately 1,000 square feet, we find under Base Cubic Foot prices on page 77 as follows:

Area—1,000 square feet, Base No. 2—face brick—.348

This base price is then entered on the work sheet, line I-2.

The appraiser then compares the specifications with the Appraisal Report as it has been marked up in the field.

Under Section D, *Exterior Construction*, he finds foundations and walls are normal, but metal casement windows are specified in place of wood sash. Therefore, there is an extra charge of .017 to be applied in the "Correction to Base Unit Costs" column.

Under the item of *Roof*, the specification quotes wood shingles, the actual condition being slate shingles. Here is another charge of .011.

The appraisal report shows that the building contains one finished room in the attic, and two dormer windows. In the Manual we get a charge of \$110.00 for dormer windows and \$200.00 for the additional finished room.

APPRAISAL REPORT

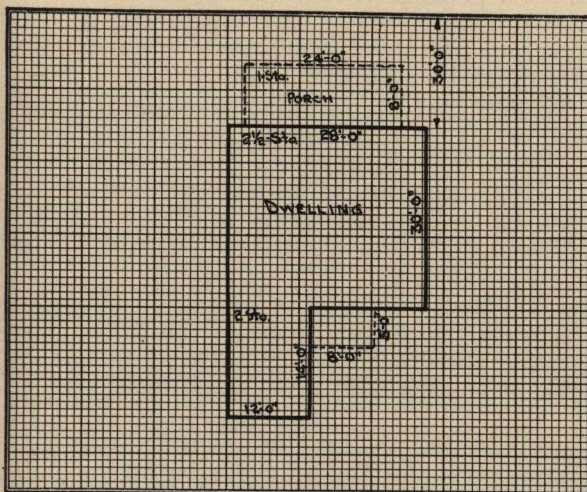
Owner. JOHN DOE Location: No. 0000 Street. 30 MAIN ST

City. DALLAS, TEX Inspector. A.M.M Date. 1-4-35

GRADE				Key: 1-Expensive; 2-Good; 3-Average; 4-Cheap	REVISION TO BASE UNIT COST - CENTS -	FLAT CHARGES		
1	2	3	4	A. EXTERIOR ARCHITECTURE GENERAL PLAN LANDSCAPING EXPOSURE	B. Type of Building: Cottage - Bungalow - <u>2-Story Dwelling</u> Duplex Dwt. Terrace - Apartments - Store - Dept. Store - Hotel - Hospital - Office Bldg. Theater - Church - Factory - Shop or Storage - Warehouse - Public Bldg. Public Garage - School - Club - Bay - Filling Station C. Construction: Height, Stories. <u>2 1/2</u> Stories. Rooms. <u>7</u> Apts. Baths. F.P. Semi-F.P. Ord. Frame. <u>Brick</u> Steel - Concrete - Metal - Stone - Veneer.			
D. BASIC EXTERIOR CONSTRUCTION								
FOUNDATION Material: <u>Concrete</u> Concrete Block - Brick - Stone - Cut Stone - Piers. Excavation: <u>100</u> % of Area <u>75</u> % of Depth								
WALLS Types: Wood Frame - Steel Frame - Concrete Frame - <u>Solid Masonry</u> Face Material: <u>Face Brick</u> Common Brick - Terra Cotta - Siding - Shingles - Stucco - Concrete - Concrete Block - Marble - Granite - Stone - Cut Stone - Metal. Bearing Wall. <u>144</u> ft. Curtain Wall. ft. Party Wall. ft. Division Wall. ft.								
WINDOW SASH Wood <u>Metal</u> Plain <u>Casement</u> Glass <u>Plain</u> Plate - Lensed								
EXTERIOR TRIM Material: Wood - Tile <u>Stone</u> Plastic - Metal - Terra Cotta - Marble - Granite.								
ROOF Type: Flat <u>Gable</u> Hip - Gambrel - Monitor - Saw Tooth <u>Flat</u> Material: <u>Shingles</u> Wood - Composition - Concrete - Gypsum - <u>Slate</u> Tile - Asbestos - Copper - Tin - Built-up Rolled. Finished Rooms in Attic. <u>1</u>								
E. BASIC INTERIOR CONSTRUCTION								
BASEMENT Finish <u>Open</u> Plastered Wall - Ceiling No. Finished Rooms. Sub-Cellar.								
HEATING System: Steam - Hot Water <u>Radiator</u> Hot Air <u>Stoves</u> Concealed Radiation.								
FLOORS Material: <u>Hard</u> Maple - Cement - Tile - Marble - Cork - Terrazo - Linoleum - Composition. Type: Reinl. Concrete - Steel & Coner. - Steel & Tile - <u>Steel & Wood</u> - <u>Poling</u> - Mill Type.								
INTERIOR FINISH Material: <u>Plaster</u> Oak <u>Gum</u> Birch - Poplar - Metal - Formica - Steel. Fireplaces: No. Colonial - Stone - <u>Brick</u> - Ash Pit.								
PARTITIONS Material: Wood Lath - <u>Metal Lath</u> - Plaster Board - Ship-lap - Gypsum Tile - Hollow Tile. Finish: Painted - <u>Papered</u> - Craftex - Canvased - Travertine.								
ELECTRIC SYSTEM Fixtures: Modern - Old - <u>Suitable to Type</u> Type: <u>Conduit in BX</u> - Knob and Tube House Phones								
PLUMBING Baths. <u>2</u> Showers. <u>1</u> Toilets. <u>2</u> Lavatories. <u>2</u> Laundry Trays. <u>1</u> Sinks. <u>1</u> Slop Sinks. <u>1</u> Water Cn. Tile Floors. <u>10</u> x <u>8</u> @ <u>90</u> Tile Walls. <u>4</u> x <u>40</u> @ <u>110</u>								
F. EQUIPMENT AND ACCESSORY SCHEDULE								
		PRICE	1	2	3	4	Windows doors	PRICE
✓	Mech. Refrig.		✓				Screens <u>On 20W, 4D</u>	<u>130</u> 00
✓	Concealed Beds		✓				Ironing Boards	<u>18</u> 00
✓	Wardrobes						Service Cabinets	
✓	Breakfast Sets - <u>1</u>	<u>36</u> 00					Mail Boxes	
✓	Dressing Tables - <u>2</u>	<u>70</u> 00					Mail Chute	
✓	Stoves - Elec.						Telephone Cabs	
✓	Stoves - Gas						Weather Strips <u>20W, 4D</u>	<u>80</u> 00
✓	Incinerator						Awnings	
✓	Kitchen Cabinets - <u>1</u>		✓				EXTRAS	
✓	Dish Closets - <u>2</u>							
✓	Pass. Elevator							
✓	Frt. Elevator							
✓	Fire Escape							
✓	Automatic Sprinklers							
TOTAL		<u>106</u> 00	TOTAL				<u>228</u> 00	
G. PORCHES - Memo.							I. Sound Value of Building	
Size Height Cubage Found. Floor Columns Roof <u>3</u> x <u>24</u> x <u>15</u> = <u>2880</u> CON. CON. Stone 50. <u>5</u> x <u>8</u> x <u>15</u> = <u>600</u> " " " " " " " " " " " "							1-1. Total Corrections <u>.038</u> 1-2. Base Unit Price for Type and Class (Ch. IV) <u>.348</u> 1-3. Total Base Unit Price @ Index 100 (1 plus 2) <u>.386</u> 1-4. Total Flat Charges \$ <u>1,802</u> 00 1-5. Cu. Ft. (Sec. 4) <u>36,540</u> x Base Price (Line 3) <u>.386</u> = <u>\$14,104</u> 00 1-6. Total Value, @ Index 100 <u>\$15,906</u> 00 1-7. Local Index x <u>.930</u> x Value (Line 6) <u>\$15,906</u> 00 = Reproduction Costs \$ <u>14,793</u> 00 1-8. Depr. (Sec. H.) <u>.18</u> x Rep. Costs (Line 7) <u>\$14,793</u> 00 = <u>\$2,663</u> 00 1-9. SOUND VALUE OF BUILDING <u>\$12,130</u> 00	
H. DEPRECIATION Base Rate <u>20</u> % Date Built: - <u>1925</u> Remodeled: Condition, Exterior: <u>Excellent</u> - Good - <u>Normal</u> - Fair - Poor Condition, Interior: <u>Excellent</u> - Good - <u>Normal</u> - Fair - Poor % for Condition <u>100</u> % % for Obsolescence <u>0</u> % TOTAL DEPRECIATION RATE <u>20% - 10% = 10%</u>								

(For Sketch and Measurements of Building, Land Valuation, and Summary of Appraisal, See Other Side.)

Front Page—Boeckh Appraisal Work-Sheet and Report



J. BUILDING		
(Include here Porches (Sec. G))		
SIZE	Height	Cubage
28' x 30'	35'	29,400
12' x 14'	30'	5,400
x		
x		
x		
		<hr/> 34,800 <hr/>
PORCHES		
3480 sq ft @ 50%		1,740
x		
x		
x		
x		
x		
		<hr/> 36,540 <hr/>

GROUND FLOOR AREA
OF BLDG = 1008 SQ. FT.

BLDG. OF GOOD CONSTR.
THROUGHOUT. INTERIOR
RECENTLY REDECORATED
AND REFINISHED.

K. Other Buildings	CONSTRUCTION						Site	Height	Cubage	Base Rate	Depreciation	Base Value	Local Index	Sound Value
	Foundation	Walls	Floors	Roof	Equipment	Condition								
Private Garages							X							
Barns and Sheds							X							
Green Houses	60m.	c.	c.	d.	44.	Good	X	✓	450	250	30%	1125	930	732=
							X				(1125 - 30% x 93%)			
							X							

*See Chapter VI, Individual Costs.

$$18600 + 17095 = \frac{35695}{2} = 17847.5$$

LAND	Unit Percentage Factor		Unit Percentage Factor		Sale or Rental Analysis of Neighborhood		Frontage	
	100	10	100	10	No.	Date	Price	Index
Depth	200'	10	Schools		1	1915	24.00	34/100
Width	65'		Churches	14.4%	2	1932	15.00	33/816
Shape			Neighborhood Shopping	2				
Topography	LEVEL		Main Shopping	45 MIN. 5				
Street Width	65'							
Alley								
Corner Lot								
Street Paving	CONC.	5	Zoning Laws	ENFORCED				
Side Walks			4 Developed	65%	10			
Street Lights			Classification	R23 1/4"	20			
Telephone	BLVD	5	Exposure					
Sewer—Water			Filled Ground					
Gas—Electric								
Transportation	2.84% Cap 3							
Fire Protection								
Total Factors	3	118	Total Factors	17	135			
Net Total Factors		118	Net Total Factors		118			

N. SUMMARY OF APPRAISAL

M-1. Value, Building Structure (Line I-5) \$ 14,104⁰⁰
(Not Including Flat Charges)

M-2. Multiplied by Local Index (.930) \$ 13,017⁰⁰

M-3. Less Depreciation (Sect. H) @ 18 % \$ 2,343⁰⁰

M-4. Present Sound Value of Structure.....\$ 10,674⁰⁰

M-5. Insurance Exclusions, @ 10 % \$ 1,067⁰⁰

N-10. Sound Value of Building (Line I-9).....	\$ 12,130 ⁰⁰
N-11. Other Improvements—Sound Value (Sect. K)	\$ 732 ⁰⁰
N-12. Land Value—Including Improvements (Sect. L) \$	5215 ⁰⁰
N-13. Less Unpaid Taxes and Assessments.....	\$ None
N-14. Sound Land Value (Lines 12 minus 13).....	\$ 5215 ⁰⁰
N-15. Total Sound Economic Value.....	\$18,077 ⁰⁰

Under Section E, *Interior Construction*, basement is normal, with the exception that it contains a two car built-in garage. As this is an extra feature not contained in the basic specifications, the Manual gives \$460.00 as its additional cost.

Under *Heating*, we find that the building contains a Vapor Heating Plant, instead of a Low-Pressure Steam System, and a thermostat control. From the Manual there is found to be an additional charge of \$10.00 per room for heating, and as the building contains seven rooms, the flat charge is \$70.00. As the temperature control is also extra, there is a flat charge of \$75.00. (Page 182.)

Under *Floors*, we find that the building contains steel joists instead of wood. There is also a pine floor on the third floor. Referring to the corrective factors, we get a charge of .001 as the additional cost of steel joists, and .009 for the additional pine on the third floor.

Under *Plumbing*, we note that the building contains two bath rooms. The specification provides for only one bathroom with shower over tub, good grade. It is therefore necessary to provide one additional bathroom of average grade, with the necessary installation charges. Referring to page 184, we find a charge for an average grade set of fixtures of \$170.00, plus an installation charge of \$135.00, making a total additional plumbing charge of \$305.00. As the additional bath room also contains tile floors and walls, the additional tile cost of \$248.00 will be found by referring to page 189.

Under Section F, *Equipment and Accessories Schedule*, we find extras not provided for in the specifications, of a breakfast set, two dressing tables, copper screens on twenty windows and four doors; these windows and doors having been weather-stripped. All of these items are found under their respective headings in the "Individual Costs Section" and give a total of \$334.00 for these extras (page 180).

As this completes all of the deviations from the master specifications in the Manual, the appraiser now sums up the "Corrections to Base Unit Cost" column and "Flat Charges." He finds an additional .038 (Line I-1) to be added to the .348 base unit price for type and class at Line I-2, making a total base unit price of .386 at 100 Index (Line I-3).

In summing up the "Flat Charge" column, he has a total of \$1,802.00 extras (Line I-4).

Since *Porches* (Section G) are not taken in at any flat price but valued on the basis of their cubical volume, the cubical volume should be obtained at the same time other measurements are obtained. In this case it is found that the two porches contain a total volume of 3,480 cubic feet. Under "Porches", page 176, we find 50 percent of the volume is to be used and added to the cubic volume of the main structure.

The building contains 36,540 cubic feet and the total base price is now .386. By multiplying the cubic feet by the base price a value of \$14,104.00 is arrived at (Line I-5).

The appraiser then adds the "Flat Charges" to the value arrived at from the cubic foot price and finds that he has a total of \$15,906.00 at Line I-6. This is the total value of the building and equipment at the 100 Index price.

The Dallas Index Number for this particular type is assumed to be .930 (Line I-7) and the correct value is found by multiplying the local Index by the 100 Index value and from this is found a reproduction cost of \$14,793.00 (Line I-7).

To find the Sound Value of the Building, depreciation and obsolescence must be deducted. Under Depreciation (Section H), the building is shown as built in 1925. The inspection report reveals that the Exterior Condition was normal. The Interior Condition was excellent due to the fact that it had recently been redecorated and refinished.

Referring to the Depreciation Table (Page 192) it is found that a building of this class and age will be subject to a gross depreciation of 20 percent, but subject to a correction for its excellent interior condition of 10 percent of the 20 percent. This makes a final depreciation rate of 18 percent. When the 18 percent depreciation, \$2,663.00 (Line I-8), is deducted from the reproduction cost the Sound Value of the Building arrived at is \$12,130.00 (Line I-9).

Other Improvements

On this particular piece of property there was found a small green-house, 15x30, a total area of 450 square feet. Referring to the Individual Costs section of the Manual, it is found that this particular type of green-house has a base cost of \$2.50 per square foot. This gives a total reproduction value for this unit of \$1,125.00. As this particular structure is subject to a 30 percent depreciation, 30 percent of the cost is deducted and multiplied by the Index of .930 which gives a sound value of \$732.00.

Land Valuation

It is desired to find the value of the particular plot of ground upon which this building is constructed. The lot has a 65 foot frontage with a 200 foot depth. On the Appraisal Report is provided a section which gives the land characteristics, such as conditions pertaining to the land itself, the services, utility, and neighborhood conditions. The appraiser fills in this form, based on the conditions he finds, and referring to the Manual, Chap. XII, obtains the number of plus or minus charges, the sum total of which in the present condition as indicated gives a unit percentage factor of 118 percent (Section L).

The appraiser, however, must find the starting point of value

indicative of the neighborhood, and therefore makes an analysis of past sales. He finds a sale of \$20,000.00 made in 1925 and a second of \$15,000.00 made in 1932. As the dollar component represented in these two sales is not the same it is therefore necessary to convert both of these sales prices to an equivalent of today's price. This is done by referring to the Index Value data given on page 229 and obtaining the percentage differential between the past sales date and the Index of this present appraisal. It is found by doing this that we obtain an average neighborhood value of \$17,847.00. We now refer to the Basic Land Value Table for Residence property, page 230, and find that the Table gives us an economic value for this type of property of \$65.00 per front foot. As this particular neighborhood is above the normal specifications of the unit percentage factors, the \$65.00 unit value is multiplied by the unit percentage of 118 percent, giving an actual unit value of \$76.70 per front foot. As the lot contains sixty-five feet we have a land value without improvements of \$4,985.00.

Land Improvements

The lot contains a certain amount of grading and sodding, walks, and driveways, etc., and we refer to page 241 of the Manual and price those items individually. We thus obtain a total of \$253.00 at the 100 Index. Correcting this figure by the local Index .930 we get a current price of \$230.00 for these improvements. Summing our Land Value and Lot Improvements we get a total Land Value of \$5,215.00.

Summary of Appraisal

In Section N of the Appraisal Report all items are summarized. Land, including Land Improvements, is brought forward if the appraiser is making the appraisal for economic purposes such as Mortgage Loans. Check Unpaid Taxes and assessments and deduct them from the Land Value, as these items are a direct lien against the land itself. The value of the main improvements is brought forward from the first page, the value of the other improvements is also brought into the total. When this column is summarized there is found to be a Total Sound Economic Value of \$18,077.00, Line N-15.

For Insurance Purposes

Oftentimes it is desirable to set a value for Insurance purposes. As there are several items which are permissible exclusions, such as excavations and foundations, it is not necessary to include that portion of value in an Insurance policy. In order to obtain the value of the exclusion or the amount to be deducted, we would add to Line M-1 the value given at Line I-5, (\$14,104.00) and convert that item from the 100 Index base to the local value by multiplying it by the local Index rate of .930 (Line

M-2), then deduct on Line M-3 the 18 percent depreciation brought forward from Section H.

We find in the table on page 36 that 10 percent deduction is permissible as Insurance Exclusions on this type of property. This allows us to exclude from the insurance coverage, if full insurance is desired, a total of \$1,067.00 (Line M-5).

SPECIAL TYPES OF PROPERTY

Base Price Apartment Buildings

It has been found necessary to use several methods to determine the cubic foot base price on various types of property, due to peculiar circumstances which surround that type. It will be noted in the larger Apartment Building group, that the rates are divided up first, as to the stories in height of the property, second, as to the type of wall, and third, as to the number of rooms per unit. In calculating the base price, where there is more than one size of apartment, it is necessary to use a mean average rate based on the number of apartments according to their size.

As an example let us assume that a two story building, non-fireproof, of average type (page 106), contains twelve apartments—four two-room units and eight three-room units, with walls classified under Type No. 2. In referring to the cubic foot base price for this particular type, we find .420 as the base for the two-room units and .364 as the base for the three-room units. The mean average is taken in the following manner:

4—2-Room @ .420=	1.680
8—3-Room @ .364=	2.912
<hr/>	<hr/>
12	12) 4.592
	<hr/>
	.383

This figure of .383 is the base cubic foot price at the 100 Index, used for this particular type of building.

Base Price Factories, Department Stores, etc.

In this particular type of property it is to be noted that the corrective factor in selecting the base cubic foot price under the 100 Index is governed by the perimeter of the wall and the area of the building.

Let us assume as an example a Department Store—Fireproof—Good type (page 139), a building five stories in height with a ground area of 20,000 square feet and a wall perimeter of 500 lineal feet. Under the cubic foot base price for this building we would find a rate of .400. The rate is given for a two story building only, with the note that for each additional story a percentage of $1\frac{1}{2}$ percent must be added to this base price. This means that for this particular example with its five stories, $4\frac{1}{2}$ percent

must be added to the .400 base, making the base cubic foot price .418.

Rural and Southern Dwellings

In rural and farm sections, and through the South, often certain common items of interior equipment are lacking, such as heating plants, plumbing, etc. Where these items are included in the Manual's nearest type specifications, but are not found in the property being appraised, obtain the charges in the Individual Cost Section and deduct from Total Value at 100 Index.

INSURANCE EXCLUSIONS

Under practically every form of Fire Insurance policy to carry 100 percent of insurance to value it is unnecessary to insure such items as parts of the foundation walls, excavations, underground piping, etc. Such items cannot be destroyed by fire and the assured could not collect in the event of loss.

The extent of the excludable items in the insurance policy is governed differently in various states. For the convenience of the appraiser the following table is a fair average of cost that may be deducted in various types of structures and is given in percentage ratio to the total structure.

TABLE OF INSURANCE EXCLUSIONS

Residences				
No. of Stories	Exp.	Good	Average	Cheap
1	14%	12%	10%	8%
1½	13	11	9	7
2	12	10	8	6
3	10	8	7	6
Apartments and Stores				
2	12	10	8	6.5
3	10	8.5	7	5.5
4	8	7	5.5	4.5
5	6	5.5	5	4
Multi-story Buildings				
2 to 4 Stories—12%				
5 to 6 Stories—10				
7 to 8 Stories—8				
9 to 12 Stories—6½				
13 to 15 Stories—5½				
16 to 25 Stories—4¼				
26 to 50 Stories—4				

Strictly speaking, these exclusions would apply only to the purely structural cost. For practical purposes, it is sufficient to use the cost at the corrected cubic foot price, disregarding the flat charges.

Chapter V

CUBIC FOOT COSTS—BUILDINGS

Corrective Factors for Areas in Excess of Those Given in the Manual for Residences

The basic tables were calculated for normally shaped structures and for areas generally encountered. In order that their use may be extended for areas greater than those normally found, the following tables of factors are included. These tables take into consideration the relation of the perimeter to the area. In using them, multiply in each case the perimeter price figure below with the 1600 square foot area base price given hereafter under the correct type of building, as illustrated by this example:

The residence under consideration is a face brick two story good residence with a ground floor area of 3600 square feet and a wall perimeter of 240 feet. The cubic foot base price in this case would be $.820 \times .301$ or $.247$.

Frame Residence

Area	Perimeter									
	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'
1200	1.110	1.154	1.198							
1300	1.080	1.123	1.166	1.209						
1400		1.050	1.087	1.124						
1500		1.025	1.061	1.097						
1600		1.000	1.034	1.068	1.102					
1700			.980	1.010	1.040					
1800			.965	.994	1.023	1.052				
2000			.935	.963	.991	1.029				
2200				.910	.935	.960	.985			
2400				.890	.914	.938	.962			
2600				.870	.894	.918	.942	.966		
2800					.855	.876	.897	.918		
3000					.845	.876	.889	.911	.933	
3200						.835	.855	.875	.895	
3400						.825	.844	.863	.882	.901
3600						.820	.839	.858	.877	.896

Masonry

Area	Perimeter									
	140'	160'	180'	200'	220'	240'	260'	280'	300'	320'
1200	1.110	1.170	1.230							
1300	1.080	1.130	1.196	1.254						
1400		1.050	1.099	1.148						
1500		1.025	1.074	1.123						
1600		1.000	1.048	1.096	1.144					
1700			.980	1.021	1.062					
1800			.965	1.005	1.045	1.085				
2000			.935	.974	1.013	1.052				
2200				.910	.945	.980	1.015			
2400				.890	.925	.960	.995			
2600				.870	.903	.936	.969	1.002		
2800					.855	.884	.913	.942		
3000					.845	.874	.903	.932	.961	
3200						.835	.860	.885	.910	
3400						.825	.850	.875	.900	.925
3600						.820	.845	.870	.895	.920

In the majority of cases where the ground floor area exceeds the area given in the tables, the last or largest area given is sufficient for the average appraisal of larger areas. This is due to the fact that the price curve flattens out at this point and wall irregularities automatically correct decreased wall ratio costs as building size increases.

COTTAGES (CHEAP)—ONE STORY



A type of residence usually without basement, plastering, interior finish or modern improvements. Occupied for summer camp or found in poorer sections of cities and country villages. Price range, \$800.00 to \$2,000.00.

Specifications

EXCAVATION: Sufficient for footing only.

FOUNDATIONS: Brick piers or equal under frame construction. Full footing foundations under brick walls.

WALLS:

Base 1: 1-in. drop siding, 2-in.x4-in. studding, no plaster, hinged sash.

Base 2: 9-in. common brick on concrete footings; hinged sash and plastered interior.

Base 3: Stucco on wood lath; 2-in.x4-in. studding, hinged sash, wall board sheathed interior.

FLOORS: Single 1-in. yellow pine flooring; 2-in.x8-in. joists, 16-in. on center.

ROOF: One-quarter pitched gable roof with composition roofing, on 1-in. sheathing and 2-in.x4-in. rafters, 16-in. on center.

INTERIOR FINISH: Wall board one side on 2-in.x4-in. studding partitions; cheap yellow pine doors with home-made trim and frames.

SERVICE IMPROVEMENTS: No electric wiring. Grade D plumbing, 1 sink, 1 toilet, 1 lavatory.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(COTTAGES (CHEAP)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 WOOD LATH STUCCO
400	\$.146	\$.219	\$.158
500	.138	.206	.149
600	.130	.193	.140
700	.122	.180	.132
800	.116	.169	.125
900	.111	.161	.120
1,000	.107	.154	.115
1,100	.104	.149	.112
1,200	.101	.143	.109
1,600	.092	.125	.100

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

BASEMENT: Full or partial basement, use cheap bungalow prices.

FLOORS: Hard pine floors, add to base price..... .014

ROOF: Sheet metal or tin roof, add to base price..... .008

Composition shingles, light, add to base price..... .005

INTERIOR FINISH: Plastered walls and ceiling, add to base price, frame building..... .030

brick building..... .025

Shiplap partitions, add to base price..... .019

SERVICE IMPROVEMENTS: Electric lights, knob and tube wiring, add to base price..... .009

ATTIC: Floored with yellow pine and rough stairway, add to base price009

Finished room, add

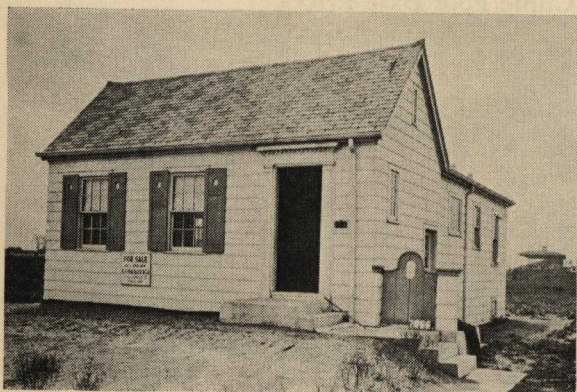
per 1 room..... \$190.00

per 2 rooms..... 300.00

Dormer windows, add per window..... 45.00

ADDITIONAL PLUMBING: See Plumbing Section for class.

COTTAGES (AVERAGE)—ONE STORY



A type of residence usually found without basement, with wood lath plastering, cheap interior finish and only moderate amount of modern improvements. Occupied for summer residence purposes or found in cheaper sections of cities or in small towns. Price range, \$1,500.00 to \$3,000.00.

Specifications

EXCAVATION: Sufficient for footing only.

FOUNDATIONS: Brick piers or equal under frame construction—full footing foundation under brick walls.

WALLS:

Base 1: 1-in. drop siding on 2-in.x4-in. studding; double hung yellow pine sash with single strength glass; no building paper or base sheathing.

Base 2: 9-in. common brick; plastered interior, double hung yellow pine sash.

Base 3: Stucco on wood lath; 2-in.x4-in. studding; no building paper on sheathing; plastered interior.

FLOORS: Single 1-in. yellow pine on 2-in.x10-in. joists, 16-in. on center.

ROOF: One-quarter pitched hip roof; composition shingles on $\frac{7}{8}$ -in. sheathing and 2-in.x6-in. rafters, 16-in. on center; no eave trough or downspouts.

INTERIOR FINISH: Two coat plastering on wood lath; 2-in.x4-in. studding partitions, ordinary grade of yellow pine millwork and trim; cheap hardware.

SERVICE IMPROVEMENTS: Drop cord electric lights; knob and tube wiring; Grade D plumbing. Fixtures: 1 sink, 1 toilet, 1 lavatory, 1 bathtub and septic tank.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(COTTAGES (AVERAGE)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 WOOD LATH STUCCO
400	\$.219	\$.313	\$.233
500	.207	.283	.220
600	.195	.265	.207
700	.183	.247	.194
800	.174	.233	.184
900	.166	.221	.176
1,000	.160	.211	.169
1,100	.156	.204	.164
1,200	.150	.196	.159
1,600	.132	.172	.144

For areas in excess of those shown above, see Page 37

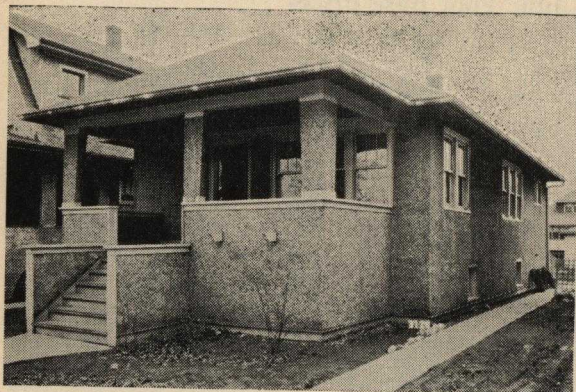
Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: Full or partial basement, use base prices for average bungalow.		
WALLS: 1-in. sheathing on studding under siding, add 5% to base price.....		
FLOORS: No. 2 grade oak floor, laid direct on joists, add to base price .....		.007
ROOF: Wood shingles, add to base price.....		.004
Composition shingles, medium weight, add to base price .....		.004
Sheet metal, tin, add to base price.....		.011
Hip construction, add to base price.....		.011
Gutters and downspouts, add to base price.....		.005
INTERIOR FINISH: Cheap yellow pine woodwork and trim, deduct from base price.....		— .003
Shiplap partitions, deduct from base price.....		— .012
ATTIC: Floor of yellow pine and rough stairway, add to base price .....		.009
Finished rooms in attic, add		
per 1 room.....	\$190.00	
per 2 rooms.....	300.00	
Dormer windows, add per window.....	50.00	

SERVICE IMPROVEMENTS: See special section for additional improvements.

BUNGALOWS (CHEAP)—ONE STORY



A type of building generally found in outlying subdivisions where property has been built by promotional developments, and where there is no strict supervision by building code; substandard material and workmanship. Price range, \$2,500 to \$4,000.

Specifications

EXCAVATION: Not over 4-ft. in depth, with earth spread over lot and banked around building.

FOUNDATION: 8-in. concrete block or equal, 10-in. wall for brick superstructure; wood sash windows.

WALLS:

Base 1: ½-in. lap siding, painted two coats lead and oil; or stained wood shingles on 1-in. sheathing; 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

Base 2: 9-in. common brick; plastered interior; double hung yellow pine sash.

Base 3: Cement stucco on wood lath; 2-in.x4-in. studding, 16-in. on center. Wood lath and plastered interior, papered ordinary grade; double hung yellow pine sash.

FLOORS: Basement, cement floor. First floor, 1-in. tongue and grooved yellow pine or fir floors throughout, on 2-in.x8-in. joists, 16-in. on center. Wood lath and plastered ceilings; papered ordinary grade.

ROOF: Light weight composition shingles on 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center. Gable type roof.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding, 16-in. on center partitions; ordinary grade yellow pine doors and trim throughout; scarcity of closet space and built-in fixtures.

SERVICE IMPROVEMENTS: Hot air furnace. One set cheap enameled iron plumbing fixtures, grade D; electric lighting with knob and tube wiring and cheap lighting fixtures, average two outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(BUNGALOWS (CHEAP)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON METAL LATH
500	\$.227	\$.268	\$.237
600	.214	.252	.224
700	.201	.235	.211
800	.191	.224	.200
900	.182	.212	.190
1,000	.176	.205	.184
1,100	.171	.198	.178
1,200	.165	.191	.173
1,300	.161	.185	.168
1,400	.157	.180	.164
1,500	.153	.176	.160
1,600	.149	.172	.156

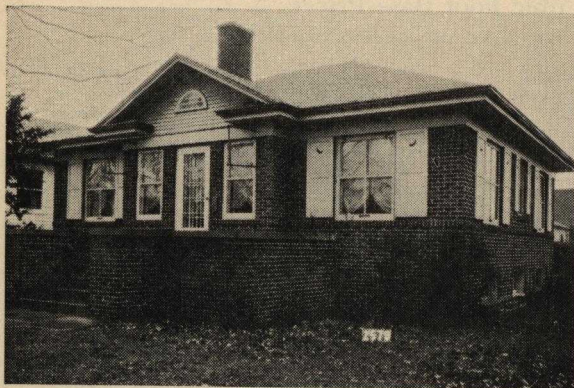
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	CENT CHARGES FLAT TO CHARGES BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.	
Field stone walls, add 10% to base price.....	
Common brick walls, add 9% to base price.....	
WALLS: Stucco on wood lath, use base prices given for frame construction.	
FLOORS: No cement floor in basement, deduct from base price	— .005
Oak floor, laid direct on joists, add to base price....	.012
INTERIOR FINISH: Shiplap partitions, deduct from base price	— .013
ROOF: Composition shingles, medium weight, add to base price .....	.003
Light slate shingles, add to base price.....	.007
ATTIC: Floor of cheap yellow pine and rough stairway, add to base price.....	.009
Dormer windows, add per window.....	\$45.00
BUILT-IN GARAGE: With fireproofed ceiling and walls, add per 1 car.....	150.00
per 2 cars.....	255.00
FINISHED ROOMS: In basement, add per room.....	60.00
Finished rooms in attic, add	
per 1 room.....	186.00
per 2 rooms.....	289.00
SERVICE IMPROVEMENTS: Additional plumbing fixtures, see special section.	

BUNGALOWS (AVERAGE)—ONE STORY



A type of building generally found in the suburban sections of the larger cities. Quality of workmanship and materials, average. No architectural supervision, but meets good building code requirements. Price range, \$3,500.00 to \$7,000.00.

Specifications

EXCAVATION: Excavated to basement window sills; earth spread over lot and around building.

FOUNDATION: 8-in. concrete block, or poured concrete with sufficient footing supports; 10-in. wall for brick buildings.

WALLS:

Base 1a: $\frac{5}{8}$ -in. lap siding painted two coats lead and oil or stained wood shingles on 1-in. sheathing; one ply felt insulation on 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior, papered ordinary grade.

Base 1b: Cement stucco on wood lath. Same construction as frame wall.

Base 2: 4-in. face brick ordinary grade backed by 4-in. common brick or construction tile; manufactured stone or brick sills; plastered interior, paper ordinary grade.

Base 3: 4-in. face brick veneer on frame. Same construction as frame wall.

Base 4: Cement stucco on 8-in. construction tile; plastered interior, papered ordinary grade.

FLOORS: Basement, cement floor. First floor, $\frac{3}{8}$ -in. oak on 1-in. sub-floor.

ROOF: Light weight composition or wood shingles on 1-in. sheathing on 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plastered on 2-in.x4-in. studding, 16-in. on center; ordinary mill stock yellow pine doors and trim throughout; average amount of cupboard space; built-in kitchen cabinet; brick mantel.

SERVICE IMPROVEMENTS: Hot air furnace. One set ordinary enameled iron plumbing fixtures, grade C; tile floor in bath; electric lighting with knob and tube wiring and ordinary fixtures, average three outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(BUNGALOWS (AVERAGE)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME (a) OR STUCCO (b)	Base 2 FACE BRICK	Base 3 FACE BRICK VENEER	Base 4 STUCCO ON TILE
500	\$.292	\$.350	\$.337	\$.311
600	.275	.328	.318	.293
700	.263	.312	.303	.280
800	.250	.296	.289	.267
900	.238	.281	.275	.254
1,000	.231	.271	.266	.246
1,100	.223	.261	.258	.239
1,200	.217	.253	.250	.231
1,300	.211	.245	.242	.225
1,400	.205	.237	.235	.219
1,600	.184	.222	.211	.207

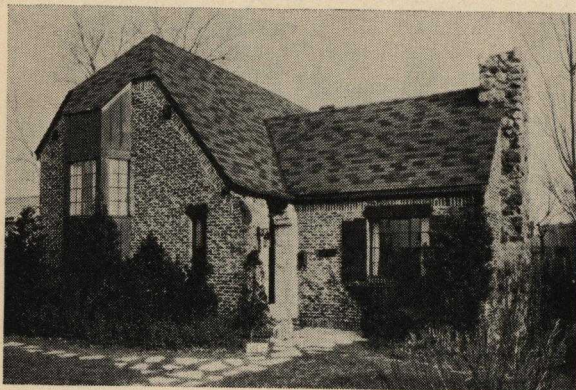
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion.		
Common brick walls, add 4% to base price.....		
Field stone walls, add 5% to base price.....		
FLOORS: No cement floor in basement, deduct from base price		— .006
One-half of basement floor cemented, deduct from base price		— .003
13/16-in. oak flooring, add to base price.....		.009
ROOF: Heavy asphalt or creodipt shingles, add to base price .....		.005
Light slate shingles, add to base price.....		.006
Sheet metal or tin, add to base price.....		.008
No gutters and downspouts, deduct from base price		— .007
INTERIOR FINISH: Metal lath or plaster board base for plaster, add to base price.....		.008
Shiplap partitions, deduct from base price.....		— .012
Red gum or plain white oak interior trim, add to base price .....		.012
Metal sash windows, add to base price.....		.008
Additional built-in features, see special section.		
SERVICE IMPROVEMENTS: Low pressure steam heat, add per room.....	\$30.00	
Vapor or hot water heat, add per room.....	40.00	
Conduit wiring, add to base price.....		.007
Additional plumbing fixtures, see special section.		
ATTIC: Floored with yellow pine and rough stairway, add to base price.....		.008
Dormer windows, add to value per window.....	50.00	
FINISHED ROOMS: In basement, add per room.....	65.00	
In attic, add		
per 1 room.....	186.00	
per 2 rooms.....	289.00	
GARAGES, BUILT-IN: Add		
per 1 car.....	155.00	
per 2 cars.....	275.00	

BUNGALOWS (GOOD)—ONE STORY



A type of building generally found in the better grade of real estate developments, built from good architectural plans by competent contractors, better than average grade of materials used throughout. Price range, \$5,000.00 to \$10,000.00.

Specifications

EXCAVATION: Excavated to 75% depth of foundation; earth spread over lot and around building.

FOUNDATION: 10-in. concrete block or poured concrete with ample footings and waterproofed.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding, stained $\frac{3}{8}$ -in. butt shingles or concrete stucco on metal lath on 1-in. base sheathing; two ply felt insulation on 2-in.x4-in. studding, 16-in. on center; plastered interior with metal lath or plaster board base, tinted or good grade paper; stone trim or elaborate entrance.

Base 2: 4-in. face brick backed by 4-in. construction tile or common brick; sand or native stone trim; steel or metal sash; furred metal lath plastered interior.

Base 3: 4-in. face brick veneer on frame base. Same requirements as frame construction.

Base 4: Cement stucco on 8-in. construction tile; native stone trim, cypress trim and windows; plastered interior on furred metal lath, tinted or good grade of paper.

FLOORS: Basement, cement floor. First floor, 1-in. clear oak scraped and varnished over 1-in. sub-flooring.

ROOF: Super-giant composition shingles or $\frac{1}{2}$ -in. butt stained shingles on 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Plaster on metal lath or plaster board base; walls tinted or good grade paper; birch-gum or oak doors and trim; plenty of cupboard space; built-in kitchen and pantry cabinets; good brick or tile mantel.

SERVICE IMPROVEMENTS: Low pressure steam heating; one set vitreous china enameled iron plumbing fixtures, grade B; tile floor and wainscoting in bathroom; electric lighting, conduit wiring with medium good grade lighting fixtures, average five outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.		CHARGES	BASE PRICE
	Common brick walls, add 9% to base price.....		
	Field stone walls, add 10% to base price.....		
WALLS:	¾-in. celotex insulation, add to base price.....		.001
FLOORS:	First floor, pegged hardwood plank floors, add to base price.....		.007
	Steel joists, add to base price.....		.001
ROOF:	Thatched shingles, add to base price.....		.014
	Slate shingles, light, add to base price.....		.002
	Slate shingles, medium, add to base price.....		.006
	Slate shingles, heavy texture, add to base price.....		.015
	Tile, interlocking, shingle effect, add to base price.....		.004
	Hip construction, add to base price.....		.014
	Cut up construction, add to base price.....		.017
	No gutters and downspouts, deduct from base price.....		—010
INTERIOR FINISH:	Mahogany doors and trim, add to base price.....		.007
	Shiplap partitions, deduct from base price.....		—023
	Wood lath and plaster, deduct from base price.....		—009
	Metal sash windows, add to base price.....		.016
	Additional built-in features, see special section.		
SERVICE IMPROVEMENTS:	Hot air heating, deduct per room.....	\$40.00	
	Vapor or hot water heat, add per room.....	10.00	
	Additional improvements, see special section.		
ATTIC:	Floor of yellow pine; ordinary grade stairway; add to base price.....		.010
	Dormer windows, add per window.....	55.00	
FINISHED ROOMS:	In basement, add per room.....	70.00	
	In attic, per 1 room.....	200.00	
	per 2 rooms.....	310.00	
GARAGES:	Built-in, add per 1 car.....	280.00	
	per 2 cars.....	460.00	

BUNGALOWS (EXPENSIVE)—ONE STORY



A type of building generally built by the owner under architectural supervision; best grade of materials used throughout. Price range, \$8,000.00 to \$20,000.00.

Specifications

EXCAVATION: Excavated to 75% depth or more of foundation; earth spread over lot but not in excess of leveling requirements.

FOUNDATION: 10-in. concrete, 13-in. structural tile or common brick with ample footings and waterproofed.

WALLS:

Base 1: 1-in. lap siding, cypress or red wood; or $\frac{3}{8}$ -in. butt shingles painted three coats lead and oil; or cement stucco lath on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center.

Base 2: First floor, 4-in. face brick on 8-in. tile; attic, half timbered and stucco on tile; steel casement sash; metal lath on furring; plastered interior.

Base 3: Special brick veneer on frame base, insulation between studs.

Base 4: 18-in. native stone, rock faced random bond; imitation cut stone trim; steel sash windows.

Base 5: Cement stucco on 12-in. tile or 8-in. hard common brick; steel sash windows; plaster on furred metal lath interior.

Base 6: 4-in. face brick or native stone veneer on 8-in. tile or common brick; steel sash windows; plaster on furred metal lath interior; elaborate stone trim main entrance.

FLOORS: Basement, cement floor. First floor, 1 $\frac{1}{4}$ -in. primed plank oak flooring over 1-in. sub-flooring.

ROOF: Gable; heavy textural slate over 1-in. lining and 2-in.x8-in. rafters, 16-in. on center.

INTERIOR FINISH: Metal lath or plaster board for plaster; textural finish or expensive paper; birch or oak interior trims throughout; built-in library shelving; some paneling and beam ceilings; mirror doors on wardrobes; breakfast room.

SERVICE IMPROVEMENTS: Two pipe vapor heating or hot water system; 1-in. all tile bath and shower, vitreous china fixtures, grade A; 1 extra lavatory; large drop apron sink; laundry fixtures; electric lighting, conduit wiring, expensive fixtures, average 5 outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(BUNGALOWS (EXPENSIVE)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK ON MASONRY	Base 3 FACE BRICK VENEER ON FRAME	Base 4 NATIVE STONE	Base 5 STUCCO ON TILE	Base 6 SPECIAL BRICK OR NATIVE STONE ON TILE
600	\$.491	\$.540	\$.524	\$.563	\$.518	\$.535
700	.462	.508	.493	.530	.481	.503
800	.437	.480	.466	.501	.460	.477
900	.416	.458	.444	.475	.439	.453
1,000	.403	.443	.430	.459	.425	.438
1,100	.391	.426	.417	.444	.413	.424
1,200	.378	.412	.404	.429	.399	.410
1,300	.369	.402	.394	.418	.389	.400
1,400	.360	.392	.384	.407	.380	.390
1,500	.352	.384	.376	.398	.371	.380
1,600	.345	.376	.368	.388	.364	.373
1,700	.339	.369	.362	.381	.357	.366

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement in calculating volume.

FLOORS: Steel joists, *add* to base price..... .001ROOF: Thatched shingles, *deduct* from base price..... —.001Tile, Spanish or French, red, *deduct* from base price —.002Tile, Spanish or French, green, *deduct* from base price —.005Cut-up construction, *add* to base price..... .017No gutters or downspouts, *deduct* from base price —.010INTERIOR FINISH: Mahogany or walnut trim, *add* to base price007

Additional built-in features, see special section.

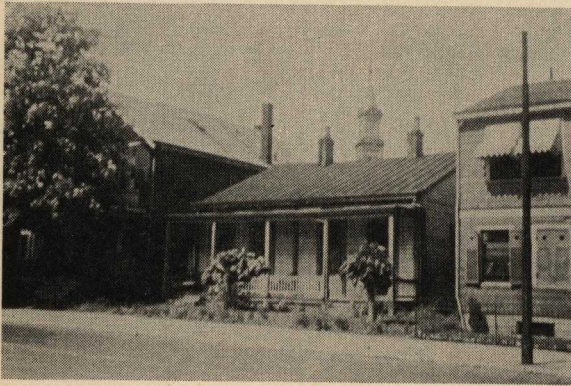
SERVICE IMPROVEMENTS: Hot air heating, *deduct* per room \$75.00Low pressure steam heating, *deduct* per room..... 10.00ATTIC: Floor of hard yellow pine and ordinary grade stairway, *add* to base price..... .010FINISHED ROOMS: In basement, *add* per room..... 80.00In attic, *add* per 1 room..... 220.00

per 2 rooms..... 320.00

Dormer windows, *add* per window..... 60.00GARAGES: Built-in, *add* per 1 car..... 365.00

per 2 cars..... 595.00

TWO FAMILY OR DUPLEX RESIDENCE (CHEAP) ONE STORY



A type of building generally found in outlying subdivisions or in factory districts where there is no strict supervision by building code. Sub-standard materials and workmanship; no division wall other than plastered partitions between occupants. Price range, \$4,000.00 to \$7,000.00.

Specifications

EXCAVATION: Not over four feet in depth with earth spread over lot and around building.

FOUNDATION: 8-in. concrete or equal, 10-in. wall for brick superstructure; good sash windows.

WALLS:

Base 1: ½-in. lap siding, painted two coats lead and oil or stained wood shingles on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

Base 2: 9-in. common brick; plastered interior; double hung yellow pine sash.

Base 3: Cement stucco on metal lath, 2-in.x4-in. studding, 16-in. on center; wood lath and plastered interior; papered ordinary grade; double hung yellow pine sash.

FLOORS: Basement, cement floor; 1-in. tongue and grooved yellow pine or fir floors throughout on 2-in.x8-in. joists, 16-in. on center.

ROOF: Flat rolled composition with a shingled mansard effect on front, on 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding, 16-in. on center partitions; ordinary grade yellow pine doors and trim throughout. Scarcity of closet space and built-in fixtures.

SERVICE IMPROVEMENTS: Two hot air furnaces; two sets cheap enameled iron plumbing fixtures, grade D; electric lighting with knob and tube wiring and cheap lighting fixtures, average two outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(2 FAMILY OR DUPLEX (CHEAP)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON METAL LATH
800	\$.242	\$.276	\$.249
900	.228	.260	.235
1,000	.216	.246	.222
1,100	.207	.236	.213
1,200	.198	.226	.204
1,300	.190	.217	.196
1,400	.185	.211	.191
1,500	.181	.206	.186
1,600	.176	.200	.181
1,800	.170	.194	.175
2,000	.163	.186	.168
2,200	.157	.179	.162

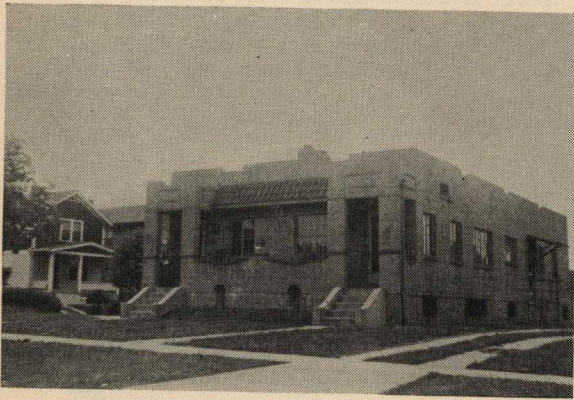
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.		
Common brick walls, add 7 $\frac{3}{4}$ % to base price.....		
Field stone walls, add 9% to base price.....		
FLOORS: No cement floor in basement, deduct from base price		— .006
One-half of basement floor cemented, deduct from base price		— .003
Hard pine floors throughout, add to base price.....		.014
ROOF: Sheet metal, tin, with a shingled mansard effect on front, add to base price.....		.008
No gutters or downspouts, deduct from base price		— .005
SERVICE IMPROVEMENTS: Low pressure steam heating, add per room.....	\$35.00	
GARAGES: Built-in, add per 2 cars.....	255.00	

TWO FAMILY OR DUPLEX RESIDENCE (AVERAGE) ONE STORY



A type of building generally found in the more concentrated suburban sections of the larger cities. Quality of materials and workmanship, average; no architectural supervision but meets good building code requirements. On this type of building a tile partition wall is to be found between occupants. Price range, \$4,500.00 to \$8,000.00.

Specifications

EXCAVATION: Excavated to basement window sills; earth spread over lot and around building.

FOUNDATION: 8-in. concrete block or poured concrete with sufficient footing supports; 10-in. wall for brick buildings.

WALLS:

Base 1: $\frac{5}{8}$ -in. lap siding painted two coats lead and oil or stained wood shingles, 1-in. sheathing, one ply felt insulation on 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior, papered ordinary grade.

Base 2: 4-in. face brick ordinary grade, backed by 4-in. common brick or construction tile; manufactured stone or brick sills; plastered interior; papered ordinary grade.

Base 3: 4-in. face brick veneer on frame. Same construction as frame wall.

Base 4: Cement stucco on 8-in. construction tile; plastered interior, papered ordinary grade.

Base 5: Cement stucco on metal lath. Balance same construction as frame wall.

FLOORS: Basement, cement floor. First floor, $\frac{3}{8}$ -in. oak on 1-in. sub-flooring.

ROOF: Gable type with light weight composition or wood shingles, 1-in. sheathing and 2-in.x6-in. rafters.

INTERIOR FINISH: Wood lath and plastered on 2-in.x4-in. studding, 16-in. on center; ordinary mill stock yellow pine doors and trim throughout; average amount of cupboard space; built-in kitchen cabinets; brick mantels.

SERVICE IMPROVEMENTS: Two hot air furnaces; two sets ordinary enameled iron plumbing fixtures, grade C; tile floor in baths; electric lighting with knob and tube wiring and ordinary fixtures, average 3 outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(2 FAMILY OR DUPLEX (AVERAGE)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK	Base 3 FACE BRICK VENEER	Base 4 STUCCO ON MASONRY	Base 5 STUCCO ON METAL LATH
800	\$.305	\$.349	\$.337	\$.321	\$.311
900	.288	.330	.318	.303	.294
1,000	.273	.313	.311	.287	.278
1,100	.261	.299	.288	.274	.266
1,200	.250	.286	.276	.263	.255
1,300	.242	.277	.268	.254	.247
1,400	.234	.268	.259	.246	.239
1,500	.228	.261	.252	.239	.233
1,600	.222	.254	.245	.233	.226
1,800	.213	.244	.236	.224	.218
2,000	.204	.234	.225	.215	.208
2,200	.197	.226	.218	.207	.201

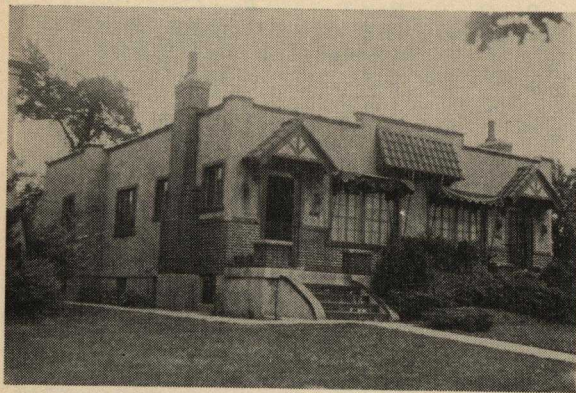
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height for unexcavated portion in calculating volume.		
Common brick walls, add 6% to base price.....		
Field stone walls, add 7½% to base price.....		
FLOORS: No cement floor in basement, deduct from base price		— .007
One-half of basement floor cemented, deduct from base price		— .003
Hard pine floors, deduct from base price.....		— .007
ROOF: Composition shingles, medium weight, add to base price .....		.003
Sheet metal, tin, add to base price.....		.007
Slate shingles, light, add to base price.....		.007
Hip construction, add to base price.....		.014
No gutters and downspouts, deduct from base price		— .007
INTERIOR FINISH: Metal lath or plaster board base, add to base price.....		.006
Red gum or plain white oak interior trim, add to base price .....		.012
Metal sash windows, add to base price.....		.006
For additional built-in features, see special section.		
SERVICE IMPROVEMENTS: Low pressure steam heating, add per room.....	\$30.00	
Vapor or hot water heating, add per room.....	40.00	
For additional plumbing fixtures see special section.		
ATTIC: Floor of yellow pine and having rough stairway, add to base price.....		.010
Dormer windows, add per window.....	50.00	
FINISHED ROOMS: In basement, add per room.....	65.00	
In attic, add		
per 1 room.....	186.00	
per 2 rooms.....	289.00	
GARAGES: Built-in, add per 2 cars.....	275.00	

TWO FAMILY OR DUPLEX RESIDENCE (GOOD) ONE STORY



A type of building generally found in the better but more concentrated sections of cities. Built from good architectural plans by competent contractors; better than average grade of materials used throughout; substantial fire wall separates occupants. Price range, \$6,500.00 to \$12,000.00.

Specifications

EXCAVATION: Excavated to full depth of foundation, earth spread over lot and around building.

FOUNDATION: 10-in. concrete block or poured concrete with ample footings and waterproofed.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding, stained $\frac{3}{8}$ -in. butt shingles or concrete stucco on metal lath, 1-in. base sheathing, two ply felt insulation on 2-in.x4-in. studding, 16-in. on center; plastered interior with metal lath or plaster board base, tinted or good grade paper; stone trim or elaborate entrance.

Base 2: 4-in. face brick backed by 4-in. construction tile or common brick; sand or native stone trim; steel or metal sash; furred metal lath plastered interior.

Base 3: 4-in. face brick veneer on frame base. Same requirements as frame construction.

Base 4: Cement stucco on 8-in. construction tile; native stone trim; cypress trim and windows; plastered interior on furred metal lath, tinted or good grade of paper.

Base 5: Stone facing with brick or tile backing; steel sash windows; plastered on furred metal lath.

FLOORS: Basement, cement floor; First floor, 1-in. clear oak scraped and varnished over 1-in. sub-flooring.

ROOF: Super-giant composition shingles or $\frac{1}{2}$ -in. butt stained shingles on 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Plaster on metal lath or plaster on board base; walls tinted or good grade paper; birch-gum or oak doors and trim; plenty of cupboard space; built-in kitchen and pantry cabinets; good brick or tile mantels.

SERVICE IMPROVEMENTS: Low pressure steam heating; 2 sets vitreous china enameled iron plumbing fixtures, grade B; tile floors and wainscoting in bathrooms; electric lighting, conduit wiring with medium good grade lighting fixtures, average 5 outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(2 FAMILY OR DUPLEX RESIDENCE (GOOD)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK	Base 3 FACE BRICK VENEER	Base 4 STUCCO ON MASONRY	Base 5 STONE VENEER
800	\$.410	\$.450	\$.440	\$.420	\$.462
900	.386	.424	.414	.396	.435
1,000	.368	.404	.395	.378	.415
1,100	.349	.383	.375	.358	.393
1,200	.336	.368	.361	.344	.378
1,300	.324	.356	.348	.332	.365
1,400	.314	.344	.337	.322	.354
1,500	.305	.334	.327	.312	.344
1,600	.298	.327	.320	.305	.336
1,800	.286	.314	.307	.293	.322
2,000	.274	.301	.294	.281	.308
2,200	.266	.292	.286	.273	.300

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.		
Common brick walls, add 9% to base price.....		
Field stone walls, add 10% to base price.....		
WALLS: ¾-in. celotex insulation, add to base price.....		.001
FLOORS: Steel joists, add to base price.....		.001
ROOF: Composition shingle, medium, deduct from base price		— .003
Slate shingle, light, add to base price.....		.002
Slate shingle, medium, add to base price.....		.006
Tile, interlocking shingle effect, add to base price..		.005
No gutters or downspouts, deduct from base price..		— .010
INTERIOR FINISH: Mahogany or walnut for trim and doors, add to base price.....		.016
No steel sash windows, deduct from base price.....		— .009
Additional built-in features, see special section.		
SERVICE IMPROVEMENTS: Hot air heating, deduct per room	\$40.00	
Vapor or hot water heating, add per room.....	10.00	
Additional plumbing fixtures, see special section.		
ATTIC: Floor of yellow pine and having ordinary stairways, add to base price.....		.012
Dormer windows, add per window.....	55.00	
FINISHED ROOMS: In basement, add per room.....	70.00	
In attic, add per 1 room.....	200.00	
per 2 rooms.....	310.00	
GARAGES: Built-in, add per 2 cars.....	460.00	

COTTAGES (CHEAP)—1½ STORY



A type of residence usually without basement, plastering, interior finish or modern improvements. Occupied for summer camp or found in poorer sections of cities and country villages. Price range, \$800.00 to \$2,000.00.

Specifications

EXCAVATION: Sufficient for footing only.

FOUNDATIONS: Brick piers or equal under frame construction—full footing foundation under brick walls.

WALLS:

Base 1: 1-in. drop siding, 2-in.x4-in. studding, no plaster; hinged sash.

Base 2: 9-in. common brick on concrete footings; hinged sash and plastered interior.

Base 3: Stucco on wood lath, 2-in.x4-in. studding; hinged sash; wallboard sheathed interior.

FLOORS: Single 1-in. yellow pine flooring, 2-in.x8-in. joists, 16-in. on center.

ROOF: Double pitched roof, composition roofing on 1-in. sheathing and 2-in.x4-in. rafters, 16-in. on center.

INTERIOR FINISH: Wall board one side on 2-in.x4-in. studding partitions; cheap yellow pine doors with home made frames and trim.

SERVICE IMPROVEMENTS: No electric wiring; plumbing, grade D; 1 sink, 1 toilet; 1 lavatory.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(COTTAGES (CHEAP)—1½ STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 WOOD LATH STUCCO
400	\$.151	\$.226	\$.163
500	.141	.210	.152
600	.131	.194	.141
700	.124	.182	.134
800	.118	.172	.127
900	.113	.164	.122
1,000	.110	.158	.118
1,100	.107	.153	.115
1,200	.104	.148	.112
1,600	.095	.133	.100

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: Full or partial basement, use cheap bungalow prices.		
FLOORS: Hard pine floors, add to base price.....		.010
ROOF: Composition shingles, light, add to base price.....		.004
Sheet metal or tin roof, add to base price.....		.007
INTERIOR FINISH: Plastered walls and ceiling, frame or stucco building .....		.025
brick building .....		.021
SERVICE IMPROVEMENTS: Electric lights, knob and tube wiring, add to base price.....		.010
Dormer windows, add per window.....	\$45.00	

Additional Plumbing, see Plumbing Section for class.

COTTAGES (AVERAGE)—1½ STORY



A type of residence usually without basement, wood lath plastering, cheap interior finish and only moderate amount of modern improvements. Occupied for summer residence purposes or found in the cheaper sections of cities or in small towns. Price range, \$1,500.00 to \$3,000.00.

Specifications

EXCAVATION: Sufficient for footing only.

FOUNDATIONS: Brick piers or equal under frame construction; full footing foundation under brick walls.

WALLS:

Base 1: 1-in. drop siding on 2-in.x4-in. studding; double hung yellow pine sash with single strength glass; no building paper or base sheathing.

Base 2: 9-in. common brick; plastered interior; double hung yellow pine sash.

Base 3: Stucco on wood lath, 2-in.x4-in. studding; no building paper on sheathing; plastered interior.

FLOORS: Single 1-in. yellow pine on 2-in.x10-in. joists, 16-in. on center.

ROOF: Double pitched, composition shingles on ⅞-in. sheathing and 2-in.x6-in. rafters, 16-in. on center; no eavetrough or downspouts.

INTERIOR FINISH: Two coat plastering on wood lath, 2-in.x4-in. studding partitions; ordinary grade of yellow pine millwork and trim; cheap hardware.

SERVICE IMPROVEMENTS: Drop cord electric lights, knob and tube wiring; plumbing, grade D. Fixtures, 1 sink, 1 toilet, 1 lavatory, 1 bathtub and septic tank.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(COTTAGES (AVERAGE)—1½ STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON WOOD LATH
400	\$.226	\$.306	\$.243
500	.212	.285	.228
600	.197	.264	.211
700	.185	.245	.198
800	.177	.234	.189
900	.170	.224	.181
1,000	.165	.216	.175
1,100	.160	.209	.169
1,200	.155	.202	.164
1,600	.140	.181	.149

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: Full or partial basement, use base prices for average bungalow.		
WALLS: 1-in. sheathing on studding under siding, add 5% to base price.....		
FLOORS: First floor, No. 2 grade oak laid direct on joists, add to base price.....		.006
ROOF: Wood shingles, add to base price.....		.003
Composition shingles, medium weight, add to base price .....		.003
Sheet metal, tin, add to base price.....		.009
Hip construction, add to base price.....		.009
Gutters and downspouts, add to base price.....		.005
INTERIOR FINISH: Cheap yellow pine, deduct from base price		— .003
SERVICE IMPROVEMENTS: See special section for additional improvements.		
Dormer windows, add per window.....		\$50.00

BUNGALOWS (CHEAP)—1½ STORY



A type of building generally found in outlying subdivisions where property has been built by promotional developments, and where there is no strict supervision by building code; sub-standard material and workmanship. Price range, \$2,500.00 to \$5,000.00.

Specifications

EXCAVATION: Not over four feet in depth with earth spread over lot and banked around building.

FOUNDATION: 8-in. concrete or equal, 10-in. wall for brick superstructure; wood sash windows.

WALLS:

Base 1: ½-in. lap siding, painted two coats lead and oil or stained wood shingles on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

Base 2: 9-in. common brick; plastered interior; double hung yellow pine sash.

Base 3: Cement stucco on wood lath, 2-in.x4-in. studding, 16-in. on center; wood lath and plastered interior, papered ordinary grade; double hung yellow pine sash.

FLOORS: Basement, cement floor; First floor 1-in. tongue and grooved yellow pine or fir floors on 2-in.x8-in. joists, 16-in. on center; wood lath and plastered ceiling; papered ordinary grade.

ROOF: Light weight composition shingles on 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center; gable type

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding, 16-in. on center; partitions; ordinary grade yellow pine doors and trim throughout; scarcity of closet space and built-in fixtures.

SERVICE IMPROVEMENTS: Hot air furnace; one set cheap enameled iron plumbing fixtures, grade D; electric lighting with knob and tube wiring and cheap lighting fixtures, average two outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(BUNGALOWS (CHEAP)—1½ STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON WOOD LATH
500	\$.235	\$.277	\$.246
600	.218	.257	.229
700	.205	.241	.215
800	.196	.230	.205
900	.188	.220	.197
1,000	.182	.213	.191
1,100	.177	.206	.186
1,200	.173	.200	.181
1,300	.168	.195	.176
1,400	.165	.191	.173
1,500	.162	.188	.170
1,600	.159	.185	.167

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.		
Field stone walls, add 8½% to base price.....		
Common brick walls, add 7½% to base price.....		
WALLS: Stucco on wood lath, use base prices given for frame construction.		
FLOORS: No cement floor in basement, deduct from base price		— .004
First floor, oak, laid direct on joists, add to base price .....		.010
ROOF: Composition shingles, medium weight, add to base price .....		.002
Slate shingles, light, add to base price.....		.006
GARAGE: Built-in, with fireproofed ceiling and walls, add		
per 1 car.....	\$150.00	
per 2 cars.....	255.00	
FINISHED ROOMS: In basement, add per room.....	65.00	
WINDOWS: Dormer, add per window.....	45.00	

BUNGALOWS (AVERAGE)—1½ STORY



A type of building generally found in the suburban sections of the larger cities. Quality of workmanship and materials, average. No architectural supervision but meets with good building code. Price range, \$3,500.00 to \$7,000.00.

Specifications

EXCAVATION: Excavated to basement window sills with earth spread over lot and around building.

FOUNDATION: 8-in. concrete block or poured concrete with sufficient footing supports; 10-in. wall for brick buildings.

WALLS:

Base 1a: 5/8-in. lap siding painted two coats lead and oil or stained wood shingles, 1-in. sheathing, one ply felt insulation on 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior, papered ordinary grade.

Base 1b: Cement stucco on wood lath. Same construction as frame wall.

Base 2: 4-in. face brick ordinary grade, backed by 4-in. common brick or construction tile; manufactured stone or brick sills; plastered interior, papered ordinary grade.

Base 3: 4-in. face brick veneer on frame. Same construction as frame wall.

Base 4: Cement stucco on 8-in. construction tile; plastered interior, papered ordinary grade.

FLOORS: Basement, cement floor. First floor, 3/8-in. oak on 1-in. sub-floor. Second floor, 1-in. yellow pine flooring.

ROOF: Light weight composition or wood shingles, 1-in. sheathing on 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plastered on 2-in.x4-in. studding, 16-in. on center; ordinary mill stock yellow pine doors and trim throughout; average amount of cupboard space; built-in kitchen cabinet; brick mantel.

SERVICE IMPROVEMENTS: Hot air furnace; one set ordinary enameled iron plumbing fixtures, grade C; tile floor in bath; electric lighting with knob and tube wiring and ordinary fixtures, average three outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see Detail Section for Individual Costs.

(BUNGALOWS (AVERAGE)—1½ STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 a & b FRAME (a) OR STUCCO (b)	Base 2 FACE BRICK	Base 3 FACE BRICK VENEER	Base 4 STUCCO ON TILE
500	\$.308	\$.368	\$.357	\$.329
600	.285	.340	.330	.304
700	.269	.320	.311	.286
800	.257	.306	.296	.274
900	.246	.292	.283	.262
1,000	.239	.282	.274	.253
1,100	.232	.274	.265	.246
1,200	.226	.266	.258	.240
1,300	.221	.258	.251	.234
1,400	.216	.253	.244	.229
1,600	.209	.246	.237	.222

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.		
Common brick walls, add 3% to base price.....		
Field stone walls, add 4% to base price.....		
FLOORS: No cement floor in basement, deduct from base price		— .005
One-half of basement floor cemented, deduct from base price		— .003
First floor, 13/16-in. oak flooring, add to base price .....		.008
ROOF: Heavy asphalt or creo-dipt shingles, add to base price .....		.004
Light slate shingles, add to base price.....		.005
Sheet metal or tin, add to base price.....		.006
No gutters and downspouts, deduct from base price		— .006
INTERIOR FINISH: Metal lath or plaster board base for plaster, add to base price.....		.008
Red gum or plain white oak interior trim, add to base price .....		.014
Metal sash windows, add to base price.....		.001
Additional built-in features, see special section.		
SERVICE IMPROVEMENTS: Low pressure steam heat, add per room	\$30.00	
Vapor or hot water heat, add per room.....	40.00	
Conduit wiring, add to base price.....		.006
Additional plumbing fixtures, see special section.		
FINISHED ROOMS: In basement, add per room.....	65.00	
Dormer windows, add per window.....	50.00	
GARAGES: Built-in, add per 1 car.....	155.00	
per 2 cars.....	275.00	

BUNGALOWS (GOOD)—1½ STORY



A type of building generally found in the better grade of real estate developments; built from good architectural plans by competent contractors; better than average grade of materials used throughout. Price range, \$5,000.00 to \$10,000.00.

Specifications

EXCAVATION: Excavated to 75% of depth of foundation with earth spread over lot and around building.

FOUNDATION: 10-in. concrete block or poured concrete with ample footings and waterproofed.

WALLS:

Base 1: ¾-in. lap siding, stained ⅝-in. butt shingles or concrete stucco on metal lath, 1-in. base sheathing, two ply felt insulation on 2-in.x4-in. studding, 16-in. on center; plastered interior with metal lath or plaster board base, tinted or good grade paper; stone trim or elaborate entrance.

Base 2: 4-in. face brick backed by 4-in. construction tile or common brick; metal lath plastered interior.

Base 3: 4-in. face brick veneer on frame base. Same requirements as frame construction.

Base 4: Cement stucco on 8-in. construction tile, native stone trim; cypress trim and windows; plastered interior on furred metal lath, tinted or good grade of paper.

FLOORS: Basement, cement floor. First floor, 1-in. clear oak scraped and varnished over 1-in. sub-flooring. Second floor, hard pine.

ROOF: Super-giant composition shingles or ½-in. butt shingles stained on 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Plaster on metal lath or plaster board base for walls, tinted on good grade paper; birch-gum or oak doors and trim; plenty of cupboard space; built-in kitchen and pantry cabinets; good brick or tile mantel.

SERVICE IMPROVEMENTS: Low pressure steam heating; one set vitreous china enameled iron plumbing fixtures, grade B; tile floor and wainscoting in bathroom; electric lighting, conduit wiring with medium good grade lighting fixtures, average five outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(BUNGALOWS (GOOD)—1½ STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK	Base 3 FACE BRICK VENEER	Base 4 STUCCO ON TILE
500	\$.462	\$.516	\$.492	\$.475
600	.429	.480	.467	.442
700	.405	.453	.442	.417
800	.386	.432	.419	.397
900	.370	.413	.402	.381
1,000	.359	.400	.390	.370
1,100	.350	.390	.378	.360
1,200	.341	.380	.368	.351
1,300	.333	.370	.360	.343
1,400	.325	.361	.352	.335
1,500	.320	.355	.344	.329
1,600	.315	.350	.338	.324

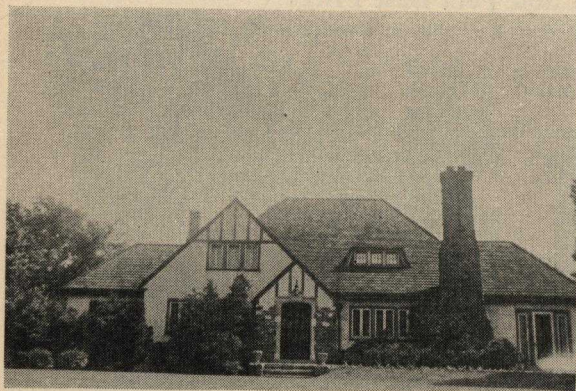
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.		
Common brick walls, add 8% to base price.....		
Field stone walls, add 9% to base price.....		
WALLS: ¾-in. celotex insulation, add to base price.....		.001
FLOORS: First floor, pegged hardwood plank floors. Second floor, plain white oak, add to base price.....		.007
Steel joists, add to base price.....		.001
ROOF: Thatched shingles, add to base price.....		.010
Slate shingles, light, add to base price.....		.002
Slate shingles, heavy, add to base price.....		.005
Slate shingles, heavy textural, add to base price....		.013
Tile, add to base price.....		.004
Hip construction, add to base price.....		.012
Cut up construction, add to base price.....		.015
No gutters or downspouts, deduct from base price		— .009
INTERIOR FINISH: Walnut or mahogany doors and trim, add to base price.....		.006
Metal sash windows, add to base price.....		.015
Additional built-in features, see special section.		
SERVICE IMPROVEMENTS: Hot air heat, deduct per room	\$40.00	
Vapor or hot water heat, add per room.....	10.00	
Additional improvements, see special section.		
FINISHED ROOMS: In basement, add per room.....	70.00	
WINDOWS: Dormer, add to value per window.....	55.00	
GARAGES: Built-in, add per 1 car.....	280.00	
per 2 cars.....	460.00	

BUNGALOWS (EXPENSIVE)—1½ STORY



A type of building generally built by the owner under architectural supervision; best grade of materials used throughout. Price range, \$8,000.00 to \$20,000.00.

Specifications

EXCAVATION: Excavated to 75% depth or more of foundation, earth spread over lot but not in excess of leveling requirements.

FOUNDATION: 10-in. concrete, 13-in. structural tile or common brick with ample footing and waterproofed.

WALLS:

Base 1: 1-in. lap siding, cypress or red wood; or ¾-in. butt shingles, painted three coats lead and oil; or cement stucco lath on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center.

Base 2: 4-in. face brick or native stone veneer on 8-in. tile or 4-in. common brick; steel sash windows; plaster on furred metal lath interior; elaborate stone trim main entrance.

Base 3: Special brick veneer on frame base, insulation between studs.

Base 4: 18-in. native stone, rock faced random bond; imitation cut stone trim; steel sash windows.

Base 5: Cement stucco on 12-in. tile or 8-in. hard common brick; steel sash windows; plaster on furred metal lath interior.

Base 6: First floor, 4-in. face brick on 8-in. tile; Second floor, half timbered and stucco on tile; steel casement sash; metal lath on furring, plastered interior.

FLOORS: Basement, cement floor. First floor, 1¼-in. pegged plank oak flooring over 1-in. sub-flooring; second floor 1-in. oak flooring over 1-in. sub-flooring.

ROOF: Gable, heavy textural slate over 1-in. lining and 2-in.x8-in. rafters 16-in. on center.

INTERIOR FINISH: Metal lath or plaster board plaster base; textural finish or expensive paper; hardwood interior trims throughout; built-in library shelving; some paneling and beam ceilings; mirror doors on wardrobes; breakfast room.

SERVICE IMPROVEMENTS: Two pipe vapor heating or hot water system; all tile bath and shower; large drop apron sink; laundry fixtures; electric lighting, conduit wiring, expensive fixtures, average five outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(BUNGALOWS (EXPENSIVE)—1½ STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK ON MASONRY	Base 3 FACE BRICK VENEER ON FRAME	Base 4 NATIVE STONE	Base 5 STUCCO ON TILE	Base 6 FACE BRICK AND STUCCO COMBINATION
600	\$.547	\$.601	\$.585	\$.624	\$.578	\$.596
700	.506	.556	.541	.576	.535	.552
800	.483	.530	.517	.550	.511	.527
900	.463	.507	.495	.527	.490	.505
1,000	.450	.493	.481	.511	.476	.491
1,100	.438	.480	.469	.497	.463	.475
1,200	.426	.467	.456	.484	.447	.462
1,300	.415	.453	.443	.469	.436	.450
1,400	.406	.443	.433	.460	.426	.440
1,500	.400	.435	.426	.451	.420	.432
1,600	.394	.427	.420	.443	.414	.425

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.

FLOORS: Steel joists, add to base price..... .001

ROOF: Thatched shingles, deduct from base price..... —.001

Tile, Spanish or French, red, deduct from base price —.002

Tile, Spanish or French, green, deduct from base price —.004

Cut up construction, add to base price..... .015

No gutters or downspouts, deduct from base price —.009

INTERIOR FINISH: Mahogany or walnut trim, add to base price008

Additional built-in fixtures, see special section.

SERVICE IMPROVEMENTS: Hot air heating, deduct per room \$75.00

Low pressure steam, deduct per room..... 10.00

FINISHED ROOMS: In basement, add per room..... 80.00

WINDOWS: Dormer, add per window..... 60.00

GARAGES: Built-in, add per 1 car..... 365.00

per 2 cars..... 595.00

COTTAGES (CHEAP)—TWO STORY



A type of residence usually without basement, plastering, interior finish or modern improvements. Occupied for summer camp or found in the poorer sections of cities and country villages. Price range, \$800.00 to \$2,000.00.

Specifications

EXCAVATION: Sufficient for footing only.

FOUNDATIONS: Brick piers or equal under frame construction; full footing foundations under brick walls.

WALLS:

Base 1: 1-in. drop siding 2-in.x4-in. studding; no plaster; hinged sash.

Base 2: 9-in. common brick on concrete footings; hinged sash and plastered interior.

Base 3: Stucco on wood lath, 2-in.x4-in. studding; hinged sash; wallboard sheathed interior.

FLOORS: Single 1-in. yellow pine flooring, 2-in.x8-in. joists, 16-in. on center.

ROOF: Double pitched roof, composition roofing on 1-in. sheathing and 2-in.x4-in. rafters, 16-in. on center.

INTERIOR FINISH: Wall board one side on 2-in.x4-in. studding partitions; cheap yellow pine doors with home-made frames and trim.

SERVICE IMPROVEMENTS: No electric wiring; plumbing, grade D; 1 sink, 1 toilet, 1 lavatory.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(COTTAGES (CHEAP)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 WOOD LATH STUCCO
400	\$.134	\$.212	\$.148
500	.126	.197	.139
600	.117	.182	.130
700	.111	.171	.122
800	.104	.160	.114
900	.099	.151	.108
1,000	.095	.144	.104
1,100	.093	.140	.102
1,200	.091	.136	.100
1,600	.085	.122	.094

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

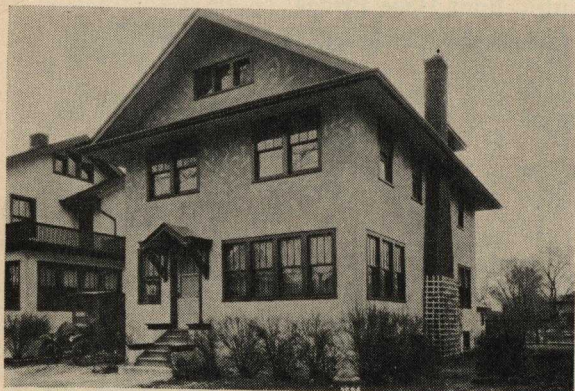
BASEMENT: Full or partial basement, use cheap residence prices.

FLOORS: First floor only hard pine floors, add to base price.. .007

ROOF: Composition shingles, light, add to base price..... .003
Sheet metal or tin roof, add to base price..... .005INTERIOR FINISH: Plastered walls and ceiling, frame or
stucco, add to base price..... .036
Brick building, add to base price..... .033SERVICE IMPROVEMENTS: Electric lights, knob and
tube wiring, add to base price..... .009ATTIC: Floored with yellow pine and rough stairway, add
to base price..... .006
Finished room, add to base price
per one room..... \$190.00
per two rooms 300.00
Dormer windows, add per window..... 45.00

ADDITIONAL PLUMBING: See plumbing section for class.

COTTAGES (AVERAGE)—TWO STORY



A type of residence usually without basement, wood lath plastering, cheap interior finish and only moderate amount of modern improvements. Occupied for summer residence purposes or found in the cheaper sections of cities or in small towns. Price range, \$1,500.00 to \$3,000.00.

Specifications

EXCAVATION: Sufficient for footing only.

FOUNDATION: Brick piers or equal under frame construction; full footing foundations under brick walls.

WALLS:

Base 1: 1-in. drop siding on 2-in.x4-in. studding; double hung yellow pine sash with single strength glass; no building paper or base sheathing.

Base 2: 9-in. common brick; plastered interior; double hung yellow pine sash.

Base 3: Stucco on wood lath, 2-in.x4-in. studding, no building paper or sheathing; plastered interior.

FLOORS: Single 1-in. yellow pine on 2-in.x10-in. joists, 16-in. on center.

ROOF: Double pitched, composition shingles on $\frac{7}{8}$ -in. sheathing and 2-in.x6-in. rafters, 16-in. on center; no eavetrough or downspouts.

INTERIOR FINISH: Two coat plastering on wood lath; 2-in.x4-in. studding partitions; ordinary grade of yellow pine millwork and trim; cheap hardware.

SERVICE IMPROVEMENTS: Drop cord electric lights, knob and tube wiring; plumbing, grade D. Fixtures: 1 sink, 1 toilet, 1 lavatory, 1 bathtub and septic tank.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(COTTAGES (AVERAGE)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON WOOD LATH
400	\$.202	\$.284	\$.217
500	.189	.264	.204
600	.176	.244	.190
700	.166	.228	.179
800	.157	.213	.169
900	.149	.200	.160
1,000	.143	.190	.153
1,100	.139	.183	.148
1,200	.135	.177	.145
1,600	.123	.159	.132

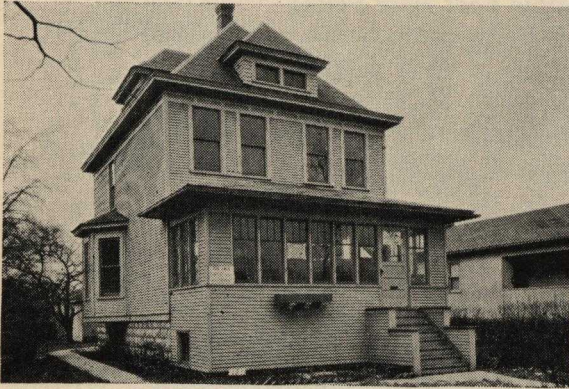
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: For full or partial basement use base prices for average residences.		
WALLS: 1-in. sheathing on studding undersiding, add 6% to base price.....		
FLOORS: First floor, No. 2 grade oak laid direct on joists, add to base price.....		.004
ROOF: Wood shingles, add to base price.....		.002
Composition shingles, medium weight, add to base price .....		.002
Sheet metal, tin, add to base price.....		.007
Hip construction, add to base price.....		.008
Gutters and downspouts, add to base price.....		.004
INTERIOR FINISH: Cheap yellow pine, deduct from base price .....		.003
SERVICE IMPROVEMENTS: See special section for additional improvements.		
ATTIC: Floor of yellow pine, and rough stairway, add to base price .....		.007
Finished rooms in attic, add		
per 1 room.....	\$190.00	
per 2 rooms	300.00	
Dormer windows, add per window.....	45.00	

RESIDENCE (CHEAP)—TWO STORY



A type of building generally found in outlying subdivisions where property has been built by promotional developments and where there is no strict supervision by building code; sub-standard material and workmanship. Price range, \$3,500.00 to \$7,000.00.

Specifications

EXCAVATION: Not over four feet in depth with earth spread over lot and bank around building.

FOUNDATION: 8-in. concrete block; 10-in. wall if brick superstructure, or equal; wood sash windows; light footings.

WALLS:

Base 1: 1-in. drop siding painted two coats lead and oil or stained wood shingles on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

Base 2: 8-in. common brick; plastered interior with ordinary grade paper.

Base 3: Cement stucco on wood lath and 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

FLOORS: Basement, cement floor. First floor, 1-in. tongue and groove yellow pine or fir floors. Second floor, on 2-in.x8-in. joists, 16-in. on center; wood lath and plaster ceilings with ordinary grade paper.

ROOF: Gable type, $\frac{1}{4}$ pitch; light weight composition shingles on 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding, 16-in. on center; partitions; ordinary grade yellow pine doors and trim throughout; scarcity of closet space and built-in fixtures.

SERVICE IMPROVEMENTS: Hot air furnace; one set cheap enameled iron plumbing fixtures, including laundry tray and tank water heater, grade D; electric light knob and tube wiring and cheap fixtures, average three outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(RESIDENCE (CHEAP)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON WOOD LATH
400	\$.236	\$.287	\$.248
500	.221	.268	.233
600	.206	.249	.217
700	.195	.235	.205
800	.183	.220	.193
900	.175	.209	.184
1,000	.167	.199	.176
1,200	.160	.190	.168
1,400	.153	.181	.161
1,600	.146	.172	.154
1,800	.141	.165	.148
2,000	.137	.160	.144

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.		
Common brick walls, add $6\frac{1}{2}\%$ to base price.....		
Field stone walls, add $7\frac{1}{2}\%$ to base price.....		
FLOORS: Hard yellow pine, add to base price.....		.007
No basement floor, deduct from base price.....		— .004
ROOF: Sheet metal, tin, add to base price.....		.005
Hip construction, add to base price.....		.010
No gutters and downspouts, deduct from base price.....		— .004
INTERIOR FINISH: Good grade of yellow pine for trim and doors, add to base price.....		.004
Steel sash windows, add to base price.....		.009
SERVICE IMPROVEMENTS: Low pressure steam heating, add per room	\$ 35.00	
For additional plumbing fixtures see special section.		
ATTIC: Floor of cheap yellow pine and having a rough stairway, add to base price.....		.006
Dormer windows, add per window.....	45.00	
FINISHED ROOMS: In basement, add per room.....	60.00	
In attic, add per 1 room.....	186.00	
add per 2 rooms.....	289.00	
GARAGES: Built-in, add per 1 car.....	150.00	
per 2 cars.....	255.00	

RESIDENCE (AVERAGE)—TWO STORY



A type of building generally found in the outlying suburban sections of the larger cities. Quality of workmanship and materials average; no architectural supervision, but meets with building code requirements. Price range, \$4,000.00 to \$8,500.00.

Specifications

EXCAVATION: Excavated to basement window sills, dirt spread over lot and around building.

FOUNDATION: 10-in. concrete block or poured concrete, with sufficient footing supports. 12-in. wall under brick building.

WALLS:

Base 1: 1/2-in. lap siding painted two coats lead and oil or stained wood shingles on one ply felt paper and 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster, papered ordinary grade.

Base 2: 8-in. common brick with plastered interior, papered ordinary grade.

Base 3: 4-in. face brick with common brick or tile backing with plastered interior, papered ordinary grade.

Base 4: 4-in. face brick veneer, one ply felt paper; balance same construction as frame.

Base 5: Cement stucco on metal lath, one ply felt paper; balance same construction as frame.

FLOORS: Basement, cement floor. First floor, 5/8-in. No. 2 oak on 1-in. sheathing supported by wooden beams, wood or cast iron columns and 2-in.x10-in. joists, 16-in. on center. Second floor, 1-in. yellow pine floors.

ROOF: Medium weight wood or composition shingles, 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding, 16-in. on center, papered ordinary grade. Standard mill stock yellow pine doors and trim; average amount of cupboard space; built-in kitchen cabinet; brick mantel.

SERVICE IMPROVEMENTS: Hot air furnace; one set ordinary enameled iron plumbing fixtures, grade C, including laundry tray and automatic water heater; electric lights with knob and tube wiring, ordinary fixtures, average four outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(RESIDENCE (AVERAGE)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 FACE BRICK	Base 4 FACE BRICK VENEER	Base 5 STUCCO ON METAL LATH
400	\$.314	\$.364	\$.386	\$.369	\$.324
500	.290	.335	.354	.340	.299
600	.266	.306	.322	.310	.274
700	.251	.288	.301	.291	.259
800	.236	.269	.281	.273	.243
900	.225	.255	.266	.259	.232
1,000	.215	.243	.254	.246	.222
1,200	.205	.231	.241	.234	.211
1,400	.195	.219	.228	.222	.201
1,600	.188	.210	.219	.212	.194
1,800	.182	.202	.212	.205	.188
2,000	.178	.197	.206	.199	.183

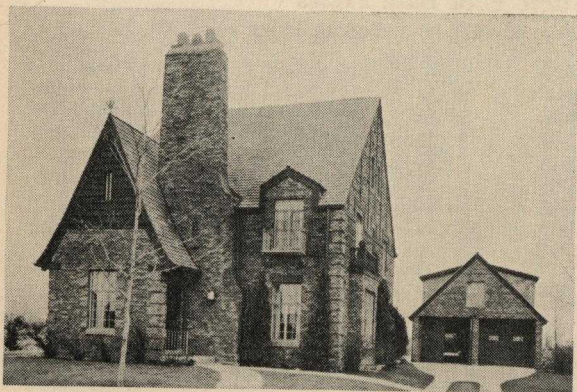
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume. Common brick walls, add $6\frac{1}{4}\%$ to base price..... Field stone walls, add $7\frac{1}{2}\%$ to base price.....		
FLOORS: First floor, No. 1 grade oak, add to base price..... No basement floor, deduct from base price..... One half of basement floor cemented, deduct from base price .....		.006 — .004 — .002
ROOF: Composition shingle, heavy, add to base price..... Slate shingle, light, add to base price..... Sheet metal, tin, add to base price..... Hip construction, add to base price..... No gutters or downspouts, deduct from base price .....		.002 .003 .003 .010 — .005
INTERIOR FINISH: Cheap yellow pine for trim and doors, deduct from base price..... Birch or gum for trim and doors, add to base price		— .004 .014
Steel sash windows, add to base price.....		.013
SERVICE IMPROVEMENTS: Low pressure steam heating, add per room..... For additional plumbing fixtures, see special section.	\$ 30.00	
ATTIC: Floor of yellow pine and rough stairway, add to base price .....		.008
Dormer windows, add per window.....	50.00	
FINISHED ROOMS: In basement, add per room..... In attic, add per 1 room..... per 2 rooms	65.00 186.00 289.00	
GARAGES: Built-in, add per 1 car..... per 2 car.....	155.00 275.00	

RESIDENCE (GOOD)—TWO STORY



A type of building generally found in the better grade of residential sections, built from good architectural plans by competent contractors; better than average grade of materials used throughout. Price Range, \$6,000.00 to \$15,000.00.

Specifications

EXCAVATION: Excavated to 75% of foundation; earth spread over lot and around building.

FOUNDATION: 12-in. concrete block or poured concrete walls with ample footings; water proofed and tiled.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding, cypress or red wood, painted three coats lead and oil; stained $\frac{3}{8}$ -in. butt shingles; or cement stucco on metal lath. 2-in. ply felt insulation on 1-in. sheathing. 2-in.x4-in. studding, 16-in. on center.

Base 2: 4-in. face brick on 8-in. tile or 4-in. common brick; plastered on furred metal lath interior; sandstone or native stone veneer on main entrance.

Base 3: Cement stucco on 12-in. tile or 8-in. common brick; plastered on furred metal lath interior; sandstone or native stone veneer on main entrance.

Base 4: Stone facing with brick or tile backing; plaster on furred metal lath interior.

FLOORS: Basement, cement floor. First floor, 1-in. clear oak scraped and varnished over 1-in. sub-floor. Second floor, No. 2 grade oak.

ROOF: $\frac{1}{2}$ -in. butt stained wood shingles, Creo-Dipt or equal; or super-giant composition shingles. Hip or colonial construction. 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Plaster on metal lath or plaster board base; walls tinted, or good grade of paper. Birch, gum or oak doors and trim. Plenty of cupboard space, built-in kitchen and pantry cabinets. Good brick or tile mantel.

SERVICE IMPROVEMENTS: Low pressure steam heating system. One set vitreous china and enameled iron plumbing fixtures plus extra labor, grade B; tile floor and wainscoting in bathroom and lavatory. Electric lights, conduit wiring, good grade of fixtures, average 5 outlets per room.

PORCHES, see Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(RESIDENCE—GOOD—2 STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK	Base 3 STUCCO ON MASONRY	Base 4 STONE VENEER
600	.374	.438	.412	.452
700	.352	.411	.387	.424
800	.330	.384	.363	.396
900	.315	.366	.346	.375
1,000	.301	.348	.329	.355
1,200	.286	.330	.312	.336
1,400	.273	.313	.299	.319
1,600	.263	.301	.286	.306
1,800	.255	.291	.277	.296
2,000	.248	.283	.270	.287

For areas in excess of those shown above, see Page 37

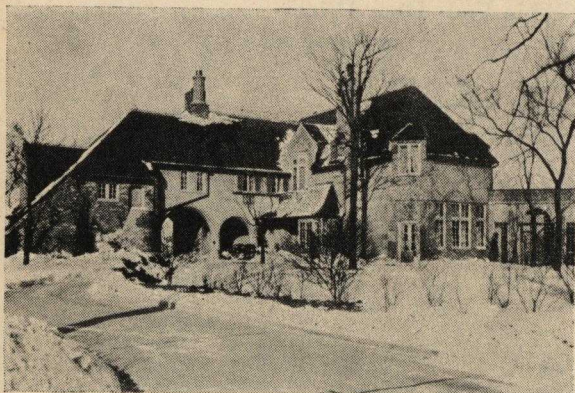
Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

FLAT CENT CHARGE
CHARGES TO
BASE PRICE

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating volume.		
Common Brick walls, add 5% to base price.....		
Fieldstone walls, add 6% to base price.....		
WALLS: ¾-in. Celotex insulation, add to base price.....		.001
FLOORS: Steel joists, add to base price.....		.001
ROOF: Composition shingles, medium, deduct from base price		— .002
Slate shingles, light, add to base price.....		.002
Slate shingle, medium, add to base price.....		.004
Slate shingles, heavy textural, add to base price....		.011
Cut up construction, add to base price.....		.010
No gutters and downspouts, deduct from base price		— .008
INTERIOR FINISH: Hardwood for trim and doors, add to base price .....		.012
Steel sash windows, add to base price.....		.017
Additional built-in features, see special section.		
SERVICE IMPROVEMENTS: Hot air heating, deduct per room	\$40.00	
Vapor or hot water add per room.....	10.00	
Additional plumbing fixtures, see special section.		
ATTIC: Floor of yellow pine and ordinary stairway, add to base price.....		.009
Dormer windows, add per window.....	55.00	
FINISHED ROOMS: In basement, add per room.....	70.00	
In attic, add per 1 room.....	200.00	
per 2 rooms.....	310.00	
GARAGES: Built in, add per 1 car.....	280.00	
per 2 cars.....	460.00	

RESIDENCE (EXPENSIVE)—TWO STORY



A type of building generally built by the owner under architectural supervision; best grade of materials and labor throughout. Price range, \$9,000.00 to \$30,000.00.

Specifications

EXCAVATION: Building excavated to full depth with excess earth spread over lot or removed.

FOUNDATION: 12-in. poured concrete; 18-in. pebble stone; 13-in. to 18-in. hard common brick or 13-in. to 18-in. standard tile or their combinations, waterproofed.

WALLS:

Base 1: 1-in. lap siding, cypress or red wood, or $\frac{3}{8}$ -in. butt shingles painted three coats lead and oil or cement stucco on metal lath and 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center.

Base 2: 4-in. face brick or native stone veneer on 8-in. tile or 4-in. common brick; steel sash windows; plaster on furred metal lath interior; elaborate stone trim main entrance.

Base 3: Special brick veneer on frame base, insulation between studs.

Base 4: 18-in. native stone, rock faced random bond; imitation cut stone trim; steel sash windows.

Base 5: Cement stucco on 12-in. tile or 8-in. hard common brick; steel sash windows; plaster on furred metal lath interior.

Base 6: First floor, 4-in. face brick on 8-in. tile; second floor, half timbered and stucco on tile; steel casement sash; metal lath on furring, plastered interior.

FLOORS: Basement, cement. First floor, $1\frac{1}{4}$ -in. pinned plank oak flooring over insulation felt and 1-in. sub-flooring, 2-in.x12-in. joists, 16-in. on center; second floor, 1-in. clear oak over 1-in. sub-flooring; hard pine floors in attic.

ROOF: Cut up gable on hip type, heavy textural slate over 1-in lining, 2-in.x8-in. rafters, 16-in. on center.

INTERIOR FINISH: Plastering textural finish or high grade paper on metal lath or plaster board; birch or oak interior trims throughout with good grade of hardware; some paneling and beam ceilings; built-in book cases; tile mantel fireplace; mirror doors on wardrobes; breakfast nook or room.

SERVICE IMPROVEMENTS: Two pipe vapor heating or hot water system; two all tile baths with showers; one extra lavatory; vitreous china fixtures, grade A; large drop apron sink; laundry trays; instantaneous water heater; electric lighting, conduit wiring, expensive fixtures, average outlets 6 per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(RESIDENCE (EXPENSIVE)—TWO STORY Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 BRICK OR STONE ON MASONRY	Base 3 FACE BRICK VENEER	Base 4 NATIVE STONE	Base 5 STUCCO ON MASONRY	Base 6 FACE BRICK AND STUCCO COMBINATION
600	\$.460	\$.523	\$.504	\$.548	\$.495	\$.497
700	.433	.490	.472	.514	.465	.467
800	.406	.458	.442	.480	.437	.437
900	.387	.435	.420	.455	.414	.417
1,000	.370	.414	.402	.433	.396	.397
1,200	.352	.392	.380	.410	.375	.377
1,400	.336	.372	.363	.390	.358	.358
1,600	.324	.358	.348	.374	.344	.344
1,800	.312	.343	.335	.359	.331	.330
2,000	.304	.332	.326	.348	.321	.321
2,200	.298	.324	.319	.340	.315	.314

NOTE: For mansions or country estates which exceed ground floor area as given in this section, use last figures given in the table corrected by perimeter correction table shown on page 37.

Care should be taken to add extra equipment costs as priced under the Special Cost Section.

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for un-excavated portion in calculating volume.		
FLOORS: Steel joists and fireproofed, add to base price.....		.001
ROOF: Slate shingle, medium, deduct from base price.....		— .006
Tile, French or Spanish, red, deduct from base price		— .003
Tile, French or Spanish, green, deduct from base price		— .001
INTERIOR FINISH: Mahogany or walnut for trim and doors, add to base price.....		.010
Additional built-in fixtures see special section.		
SERVICE IMPROVEMENTS: Hot air heating, deduct per room	\$ 75.00	
Low pressure steam heating, deduct per room.....	10.00	
Additional plumbing fixtures see special section.		
ATTIC: Floor of yellow pine and ordinary stairway, add to base price .....		.010
Dormer windows, add per window.....	60.00	
FINISHED ROOMS: In basement, add per room.....	80.00	
In attic, add per 1 room.....	220.00	
per 2 rooms	320.00	
GARAGES: Built-in, add per 1 car.....	365.00	
per 2 cars.....	595.00	

2 FAMILY OR DUPLEX RESIDENCE (CHEAP) TWO STORY



A type of building generally found in outlying subdivisions or in factory districts where there is no strict supervision by building code; sub-standard materials and workmanship; no division wall other than plastered partitions between occupants. Price range, \$4,000.00 to \$7,000.00.

Specifications

EXCAVATION: Not over four feet in depth, with earth spread over lot and around building.

FOUNDATION: 8-in. concrete block; 10-in. wall if brick superstructure, or equal. Wood sash windows, light footings.

WALLS:

Base 1: 1-in. drop siding painted two coats lead and oil or stained wood shingles on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

Base 2: 8-in. common brick; plastered interior with ordinary grade paper.

Base 3: Cement stucco on wood lath and 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

FLOORS: Basement, cement floor. First and second floors, 1-in. tongue and groove yellow pine or fir floors, on 2-in.x8-in. joists; 16-in. on center; wood lath and plaster ceilings with ordinary grade paper.

ROOF: Flat construction, roofed with rolled composition with shingle mansard effect on front, on 1-in. sheathing and 2-in.x6-in. rafter, 16-in. on center.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding, 16-in. on center partitions; ordinary grade yellow pine doors and trim throughout; scarcity of cupboard space or built-in fixtures.

SERVICE IMPROVEMENTS: Stove heat; 2 sets cheap enameled iron plumbing fixtures, including laundry trays and tank water heaters, grade D; electric lighting, knob and tube wiring, and cheap fixtures, average three outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(2 FAMILY (CHEAP)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON WOOD LATH
800	\$.225	\$.263	\$.233
900	.211	.247	.219
1,000	.201	.235	.208
1,100	.194	.227	.201
1,200	.188	.220	.195
1,300	.183	.214	.190
1,400	.178	.208	.185
1,500	.173	.202	.179
1,600	.168	.197	.174
1,800	.161	.189	.167
2,000	.156	.183	.162
2,200	.152	.178	.157

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.

Common brick walls, add $5\frac{1}{2}\%$ to base price.....

Field stone walls, add 7% to base price.....

FLOORS: No cement floors in basement, deduct from base price

— .004

One-half of basement floor cemented, deduct from base price

— .002

Hard pine floors, first floor, add to base price.....

.009

ROOF: Sheet metal, tin, with a shingled mansard effect on front, add to base price.....

.006

No gutters or downspouts, deduct from base price

— .004

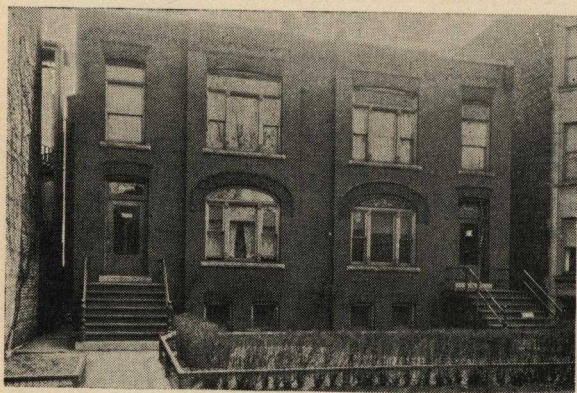
SERVICE IMPROVEMENTS: Hot air heating, add per room

\$30.00

GARAGES: Built-in, add per 2 cars.....

255.00

2 FAMILY OR DUPLEX RESIDENCE (AVERAGE) TWO STORY



A type of building generally found in the more concentrated suburban sections of the larger cities. Quality of materials and workmanship average; no architectural supervision but meets with good building code requirements. On this type of building a tile partition wall to be found between occupants. Price range, \$4,500.00 to \$8,000.00.

Specifications

EXCAVATION: Excavated to basement window sills, earth spread over lot and around building.

FOUNDATION: 10-in. concrete block or poured concrete, with sufficient footing supports, 12-in. wall under brick building.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding painted two coats lead and oil or stained wood shingles on one ply felt paper and 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster, paper ordinary grade.

Base 2: 4-in. face brick with common brick or tile backing with plastered interior, paper ordinary grade.

Base 3: 4-in. face brick veneer, one ply felt paper. Balance same construction as frame.

Base 4: 8-in. common brick with plastered interior, paper ordinary grade.

Base 5: Cement stucco on metal lath, one ply felt paper. Balance same construction as frame.

FLOORS: Basement, cement floor. First floor, $\frac{5}{8}$ -in. No. 2 oak on 1-in. sub-flooring, supported by wooden beams, wood or cast iron columns and 2-in.x10-in. joists, 16-in. on center; second floor, yellow pine floors laid direct on joists.

ROOF: Medium weight wood or composition shingles, hip or gable construction, 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding, 16-in. on center, papered ordinary grade. Standard mill stock yellow pine doors and trim; average amount of cupboard space; built-in kitchen cabinets; brick mantels.

SERVICE IMPROVEMENTS: Two hot air furnaces; 2 sets enameled iron plumbing fixtures, grade C, including laundry trays, and automatic hot water heater; tiled floor in bathroom; electric lighting with knob and tube wiring, fair lighting fixtures, average four outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(2 FAMILY RESIDENCE (AVERAGE)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 FACE BRICK	Base 3 FACE BRICK VENEER	Base 4 COMMON BRICK	Base 5 STUCCO ON METAL LATH
800	\$.275	\$.325	\$.315	\$.310	\$.282
900	.258	.304	.296	.291	.264
1,000	.246	.290	.282	.278	.252
1,100	.238	.281	.273	.269	.244
1,200	.230	.270	.262	.259	.236
1,300	.224	.263	.255	.252	.230
1,400	.217	.255	.248	.244	.222
1,500	.211	.248	.240	.237	.216
1,600	.205	.240	.233	.230	.210
1,800	.197	.231	.224	.221	.202
2,000	.191	.223	.217	.214	.196
2,200	.186	.217	.211	.208	.191

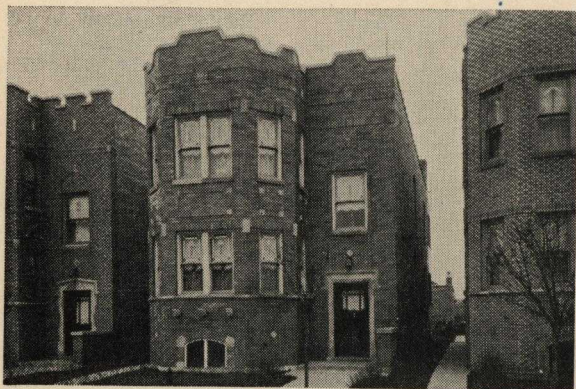
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.		
Common brick walls, add $4\frac{1}{2}\%$ to base price.....		
Field stone walls, add 6% to base price.....		
FLOORS: No cement floor in basement, deduct from base price		— .005
One-half of basement floor cemented, deduct from base price		— .002
Hard pine floors, deduct from base price.....		— .007
ROOF: Composition shingle, light, deduct from base price..		— .002
Composition shingle, heavy, add to base price.....		.002
Sheet metal, tin, add to base price.....		.003
Slate shingle, light, add to base price.....		.003
Hip construction, add to base price.....		.010
No gutters or downspouts, deduct from base price		— .005
INTERIOR FINISH: Metal lath or plaster board base, add to base price.....		.006
Red gum or plain white oak interior trim, add to base price .....		.016
Metal sash windows, add to base price.....		.006
For additional built-in features, see special section.		
SERVICE IMPROVEMENTS: Low pressure steam heating, add per room.....	\$30.00	
Vapor or hot water heating, add per room.....	40.00	
For additional plumbing fixtures, see special section.		
ATTIC: Floor of yellow pine and having rough stairways, add to base price.....		.007
Dormer windows, add per window.....	55.00	
FINISHED ROOMS: In basement, add per room.....	65.00	
In attic, add per 1 room.....	186.00	
per 2 rooms.....	289.00	
GARAGES: Built-in, add per 2 cars.....	275.00	

2 FAMILY OR DUPLEX RESIDENCE (GOOD) TWO STORY



A type of building generally found in the better but more concentrated sections of cities; built from good architectural plans by competent contractors; better than average grade of materials used throughout; substantial fire wall separates occupants. Price range, \$6,500.00 to \$12,000.00.

Specifications

EXCAVATION: Excavated to 75% of depth of foundation, earth spread over lot and around building.

FOUNDATION: 12-in. concrete blocks or poured concrete walls with ample footings, waterproofed and tiled.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding, cypress or red wood, painted 3 coats lead and oil, or stained $\frac{3}{8}$ -in. butt shingles or cement stucco on metal lath, two ply felt insulation on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center.

Base 2: 4-in. face brick on 8-in. tile or 4-in. common brick plastered on furred metal lath interior; sand stone or native stone veneer trim on main entrance.

Base 3: 4-in. face brick veneer on frame base; balance, same construction as Base 1.

Base 4: Cement stucco on 12-in. tile or 8-in. common brick plastered on furred metal lath interior; sand stone or native stone veneer trim on main entrance.

Base 5: Stone facing with brick or tile backing; plastered on furred metal lath interior.

FLOORS: Basement, cement floor. First floor, 1-in. clear oak scraped and varnished over 1-in. sub-floor; second floor, No. 2 grade oak.

ROOF: $\frac{1}{2}$ -in. butt stained wood shingles, creo-dipt or equal or super-giant composition shingles, hip or colonial construction, 1-in. sheathing, 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Plaster on metal lath or plaster board base, wall tinted or good grade of paper; birch-gum or oak doors and trims; plenty of cupboard space; built-in kitchen and pantry cabinets; good brick or tile mantels.

SERVICE IMPROVEMENTS: Low pressure steam heating systems; 2 sets vitreous china and enameled iron plumbing fixtures plus extra lavatory, grade B; tiled floors and wainscoting in bathrooms and lavatories; laundry trays and automatic water heater; electric lighting, conduit wiring, good grade of fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(2 FAMILY RESIDENCE (GOOD)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK	Base 3 FACE BRICK VENEER	Base 4 STUCCO ON MASONRY	Base 5 STONE VENEER
800	\$.415	\$.467	\$.443	\$.428	\$.480
900	.390	.439	.425	.402	.450
1,000	.378	.425	.413	.390	.437
1,100	.361	.406	.393	.372	.417
1,200	.348	.392	.378	.359	.403
1,300	.338	.381	.367	.348	.391
1,400	.328	.369	.356	.338	.378
1,500	.319	.358	.346	.328	.367
1,600	.310	.348	.335	.319	.357
1,800	.298	.334	.322	.307	.343
2,000	.288	.323	.311	.297	.332
2,200	.281	.314	.304	.290	.323

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CENT CHARGES	TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for the unexcavated portion in calculating the volume.		
Common brick walls, add 6¼% to base price.....		
Field stone walls, add 7¼% to base price.....		
WALLS: ¾-in. celotex insulation, add to base price.....		.001
FLOORS: Steel joists, add to base price.....		.001
ROOF: Composition shingle, medium, deduct from base price		— .002
Slate shingle, light, add to base price.....		.002
Slate shingle, medium, add to base price.....		.004
Tile, interlocking, shingle effect, add to base price .....		.003
No gutters and downspouts, deduct from base price		— .007
INTERIOR FINISH: Mahogany or walnut for trim and doors, add to base price.....		.022
Steel sash windows, add to base price.....		.009
Additional built-in features, see special section.		
SERVICE IMPROVEMENTS: Hot air heating, deduct per room	\$40.00	
Vapor or hot water heating, add per room.....	10.00	
Additional plumbing fixtures, see special section.		
ATTIC: Floor of yellow pine and having ordinary stairways, add to base price.....		.009
Dormer Windows, add per window.....	60.00	
FINISHED ROOMS: In basement, add per room.....	70.00	
In attic, add per 1 room.....	200.00	
per 2 rooms.....	310.00	
GARAGES: Built-in, add per 2 car.....	460.00	

ROW HOUSES OR FLATS AND TERRACES (CHEAP)—TWO STORY



A type of building generally found in the more concentrated sections of cities; usually built in groups of 3 to 20 single family residences with no areaway between but separated with fire stop partitions.

Specifications

BASEMENTS: Area excavated to one-half depth of foundation wall, 8-in. concrete block or poured concrete walls.

WALLS: On this type of structure with the exception of the end buildings, wall classification is given for the front and rear walls only, an assumed fire stop wall of construction tile or 8-in. common brick separates each residence.

Base 1: $\frac{1}{2}$ -in. lap siding painted two coats lead and oil or stained wood shingles on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

Base 2: 8-in. common brick; plastered interior with ordinary grade paper.

Base 3: Cement stucco on wood lath and 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior with ordinary grade paper.

FLOORS: Basement, cement floor. First and second floors, 1-in. tongue and groove yellow pine or fir floors, on 2-in.x8-in. joists 16-in. on center, supported by division walls.

ROOF: Flat rolled composition with shingled mansard effect on front on 1-in. sheathing and 2-in.x6-in. rafters 16-in. on center.

INTERIOR FINISH: Wood lath and plaster partitions papered ordinary grade on 2-in.x4-in. studding 16-in. on center; ordinary grade yellow pine doors and trim throughout; scarcity of cupboard space and built-in fixtures.

SERVICE IMPROVEMENTS: Stove heat; 1 set cheap enameled iron plumbing fixtures, grade D, per unit; electric lighting with knob and tube wiring and cheap fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(ROW HOUSES OR FLATS AND TERRACES (CHEAP)
TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

AREA PER UNIT Sq. Ft.	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON WOOD LATH
400	\$.223	\$.240	\$.226
500	.208	.224	.211
600	.194	.208	.197
700	.183	.196	.186
800	.173	.185	.176
900	.164	.175	.166
1,000	.157	.166	.159
1,100	.153	.162	.155
1,200	.149	.157	.151
1,300	.146	.154	.148
1,400	.144	.151	.146
1,500	.142	.149	.144
1,600	.140	.147	.142

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

HEIGHT AND USES: For one story buildings in this classification, add 4% to base price.....
 For 1½ story buildings in this classification, add 8% to base price.....
 When two story building is used as flats on each floor, add 16% to base price.....

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.
 Common brick walls, add 6% to base price.....
 Field stone walls, add 7% to base price.....

FLOORS: No cement floor in basement, deduct from base price—.003
 One-half of basement floor cemented, deduct from base price—.001
 First and second floors, hard pine, add to base price007

ROOF: Sheet metal, tin, add to base price......006
 No gutters and downspouts, deduct from base price—.004

SERVICE IMPROVEMENTS: Hot air heating, add per room \$30.00

GARAGES: Built-in, add per 1 car per unit..... 150.00
 per 2 car per unit..... 255.00

ROW HOUSES OR FLATS AND TERRACES (AVERAGE)—TWO STORY



A type of building generally found in the cheaper concentrated subdivision sections of cities, usually built in groups of 3 to 20, single family residences with no areaway between but separated by a fire stop wall.

Specifications

BASEMENTS: Area excavated to three-fourths depth of foundation, 10-in. to 12-in. concrete block or poured concrete walls.

WALLS: On this type of structure with the exception of the end buildings, wall classification is given for the front and rear walls only, an assumed fire stop wall of construction tile or 8-in. common brick separates each residence.

Base 1: $\frac{3}{4}$ -in. lap siding painted two coats lead and oil or stained wood shingles on one ply felt paper and 1-in. sheathing, 2-in.x4-in. studding 16-in. on center; wood lath and plaster, ordinary grade paper.

Base 2: 4-in. face brick with common brick or tile backing with plastered interior, paper ordinary grade.

Base 3: 4-in. face brick veneer, one ply felt paper; balance same construction as frame.

Base 4: 8-in. common brick with plastered interior, ordinary grade paper.

Base 5: Cement stucco on metal lath, one ply felt paper; balance same construction as frame.

FLOORS: Basement, cement floor. First floor, $\frac{5}{8}$ -in. No. 2 oak on 1-in. sub-flooring on 2-in.x10-in. joists 16-in. on center, supported by division walls.

ROOF: Flat built-up composition gravel covered roofing on 1-in. sheathing, 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding 16-in. on center, papered average grade; standard mill stock yellow pine doors and trim; average amount of cupboard space; built-in kitchen cabinets; brick mantel per unit.

SERVICE IMPROVEMENTS: Hot air furnace; 1 set enameled iron plumbing fixtures, grade C, including laundry trays and automatic water heater in each residence; electric lighting with knob and tube wiring, ordinary fixtures, average 4 outlets per room.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(ROW HOUSES OR FLATS AND TERRACES (AVERAGE)
TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

AREA PER UNIT Sq. Ft.	Base 1 FRAME	Base 2 FACE BRICK	Base 3 FACE BRICK VENEER	Base 4 COMMON BRICK	Base 5 STUCCO ON METAL LATH
500	\$.260	\$.282	\$.277	\$.275	\$.262
600	.243	.264	.259	.257	.245
700	.229	.249	.244	.242	.231
800	.215	.234	.229	.228	.217
900	.206	.224	.220	.218	.208
1,000	.197	.214	.210	.209	.199
1,100	.191	.207	.204	.202	.193
1,200	.187	.203	.199	.198	.189
1,300	.183	.199	.195	.194	.185
1,400	.180	.195	.192	.191	.182
1,500	.178	.193	.190	.188	.180
1,600	.176	.191	.188	.186	.178

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
TO
FLAT
CHARGES BASE PRICE

HEIGHT AND USE: For one story buildings in this classification, add 3% to base price.....
 For 1½ story buildings in this classification, add 7% to base price.....
 When two story building is used as flats on each floor, add 18% to base price.....

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.
 Common brick walls, add 6% to base price.....
 Field stone walls, add 7% to base price.....

FLOORS: No cement floor in basement, deduct from base price —.004
 One-half of basement floor cemented, deduct from base price —.002

ROOF: Sheet metal, tin, add to base price..... .003
 No gutters and downspouts, deduct from base price —.005

SERVICE IMPROVEMENTS: Low pressure steam heating, add per room..... \$30.00

GARAGES: Built-in, add per 1 car per unit..... 155.00
 per 2 car per unit..... 275.00

ROW HOUSES OR FLATS AND TERRACES (GOOD)—TWO STORY



A type of building generally found in the better but more concentrated subdivision sections of cities, usually built in groups of 3 to 20, single family residences, small court in rear and building separated by fire walls.

Specifications

BASEMENTS: Area excavated to full depth of foundation wall, 12-in. concrete block or poured concrete walls.

WALLS: On this type of structure with the exception of the end buildings, wall classification is given for the front and rear wall only, an assumed fire wall of at least 12-in. common brick separates each residence.

Base 1: $\frac{3}{4}$ -in. lap siding, cypress or red wood painted three coats lead and oil, or stained $\frac{3}{8}$ -in. butt shingles or cement stucco on metal lath, two ply felt insulation on 1-in. sheathing, 2-in.x4-in. studding 16-in. on center.

Base 2: 4-in. face brick on 8-in. tile or 4-in. common brick plastered on furred metal lath interior; sand stone or native stone veneer trim on main entrance.

Base 3: Stone facing with brick or tile backing; plastered on furred metal lath interior.

Base 4: Cement stucco on 12-in. tile or 8-in. common brick plastered on furred metal lath interior; sand stone or native stone veneer trim on main entrance.

FLOORS: Basement, cement floor. First floor, 1-in. clear oak scraped and varnished over 1-in. sub-flooring; second floor, No. 2 grade oak on 2-in.x10-in. joists 16-in. on center supported by division walls.

ROOF: Tiled mansard front, balance built-up heavy gravel covered composition roofing on 1-in. sheathing 2-in.x6-in. rafters 16-in. on center.

INTERIOR FINISH: Plaster on metal lath or plaster board, wall tinted or good grade paper; birch, gum or oak doors and trim; plenty of cupboard space with built-in kitchen and pantry cabinets; good brick or tile mantel each unit.

SERVICE IMPROVEMENTS: Individual low pressure steam heating systems; 1 set vitreous china and enameled iron plumbing fixtures plus extra lavatory, grade B; tiled floor and wainscoting in bathroom and lavatory; laundry trays and automatic water heater. Electric lighting, conduit wiring with good grade of fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(ROW HOUSES OR FLATS AND TERRACES (GOOD)
TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

AREA PER UNIT Sq. Ft.	Base 1 FRAME	Base 2 FACE BRICK	Base 3 STONE VENEER	Base 4 STUCCO ON MASONRY
600	\$.360	\$.383	\$.389	\$.372
700	.341	.362	.368	.353
800	.320	.340	.346	.332
900	.306	.326	.330	.317
1,000	.292	.311	.316	.302
1,100	.284	.302	.307	.294
1,200	.278	.296	.300	.288
1,300	.271	.288	.293	.280
1,400	.264	.281	.285	.273
1,600	.255	.271	.276	.264
1,800	.246	.262	.266	.255
2,000	.240	.255	.259	.248

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

HEIGHT AND USE: For one story buildings in this classification, add 2% to base price.....

For 1½ story buildings in this classification, add 7% to base price.....

When two story building is used at flats on each floor, add 20% to base price.....

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.

ROOF: Sheet metal, copper, add to base price..... .010

No gutters or downspouts, deduct from base price —.007

SERVICE IMPROVEMENTS: Hot air heating, deduct per room \$40.00

Vapor or hot water heating, add per room..... 10.00

GARAGES: Built-in, add per 1 car per unit..... 280.00

per 2 car per unit..... 460.00

APARTMENTS 4 FAMILY (CHEAP)—TWO STORY



A type of building usually constructed with 3 to 4 rooms and bath per unit; cheap grade of materials and poor workmanship. Price range, \$7,000.00 to \$12,000.00 per building.

Specifications

BASEMENTS: Area excavated to one-half depth of foundation wall, 8-in. concrete block or poured concrete walls; 10-in. walls for masonry.

WALLS:

Base 1: $\frac{1}{2}$ -in. lap siding painted two coats lead and oil or stained wood shingles on 1-in. sheathing, 2-in.x4-in. studding 16-in. on center; wood lath plastered interior, papered ordinary grade.

Base 2: Cement stucco on metal lath; balance same construction as frame.

Base 3: 9-in. common brick plastered interior, papered ordinary grade; double hung yellow pine sash.

FLOORS: Basement, cement floor. 1-in. tongue and groove yellow pine or fir floors throughout on 2-in.x8-in. joists 16-in. on center, supported by wood columns and girders.

ROOF: Flat rolled composition on 1-in. sheathing 2-in.x6-in. rafters 16-in. on center.

INTERIOR FINISH: Wood lath and plastered partitions, papered ordinary grade, on 2-in.x4-in. studding 16-in. on center; ordinary grade yellow pine doors and trim throughout; scarcity of cupboard space and built-in fixtures.

SERVICE IMPROVEMENTS: Stove heat; 1 set cheap enameled iron plumbing fixtures, grade D, per unit; electric lighting with knob and tube wiring and cheap lighting fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(APARTMENTS 4 FAMILY (CHEAP)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 STUCCO ON METAL LATH	Base 3 COMMON BRICK
1,000	\$.196	\$.204	\$.229
1,200	.182	.189	.213
1,400	.172	.179	.205
1,600	.163	.170	.191
1,800	.157	.163	.184
2,000	.153	.159	.179
2,200	.149	.155	.174
2,400	.146	.152	.171
2,600	.143	.149	.168

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

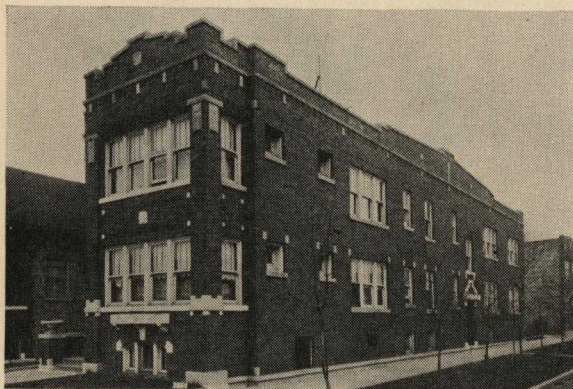
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.

WALLS: Cement stucco on wood lath and studding, use Frame base price.

FLOORS: No. 2 grade oak in living and dining rooms, add to base price..... .003
No. 2 grade oak throughout, add to base price..... .004INTERIOR FINISH: Metal lath base for plastering on partitions and ceilings, add to base price..... .007
Red gum or plain white oak trim in living and dining rooms, add to base price..... .014
Fireproofed stair hall, add to base price..... .001SERVICE IMPROVEMENTS: Hot air heating, add per room \$30.00
Low pressure steam heating, add per room..... 65.00GARAGES: Built-in, add per 2 cars..... 255.00
per 4 cars..... 555.00

FINISHED ROOMS: In basement, add per room..... 80.00

APARTMENTS 4 FAMILY (AVERAGE) TWO STORY



A type of building usually constructed with 3 to 4 rooms and bath per unit; construction meets ordinary building code requirements. Price range, \$8,500.00 to \$14,000.00 per building.

Specifications

BASEMENTS: Area excavated to three-fourths depth of foundation walls, 10-in. concrete block or poured concrete walls; 12-in. wall on masonry.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding painted two coats lead and oil or stained wood shingles on one ply felt paper and 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior, ordinary grade paper.

Base 2: Cement stucco on metal lath, one ply felt paper; balance same construction as frame.

Base 3: 4-in. face brick veneer, one ply felt paper; balance same construction as frame.

Base 4: 4-in. face brick with common brick or tile backing with plastered interior, papered ordinary grade.

Base 5: 8-in. common brick with plastered interior, papered ordinary grade.

FLOORS: Basement, cement floor. $\frac{5}{8}$ -in. No. 2 oak on 1-in. sub-flooring in living and dining rooms of each unit; balance, tongue and groove yellow pine flooring, supported by 2-in.x10-in. joists 16-in. on center with cast iron columns and steel girders.

ROOF: Medium weight wood or composition shingles, hip or gable construction, 1-in. sheathing and 2-in.x6-in. rafters 16-in. on center.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding 16-in. on center, paper average grade; standard mill stock yellow pine doors and trim; average amount of cupboard space; built-in kitchen cabinets; 1 brick or tile mantel per unit.

SERVICE IMPROVEMENTS: Separate hot air furnace for each unit with coal bins and locker rooms, 1 set enameled iron plumbing fixtures, grade C, per unit, including laundry trays and automatic water heater; tiled floors in bathrooms and main entrance; electric lighting, with knob and tube wiring and fair lighting fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(APARTMENTS 4 FAMILY (AVERAGE)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 STUCCO ON FRAME	Base 3 BRICK VENEER	Base 4 FACE BRICK	Base 5 COMMON BRICK
1,000	\$.280	\$.289	\$.318	\$.321	\$.310
1,200	.260	.268	.295	.298	.288
1,400	.248	.256	.281	.284	.274
1,600	.235	.242	.267	.269	.260
1,800	.226	.233	.257	.259	.250
2,000	.221	.228	.252	.254	.244
2,200	.215	.221	.244	.246	.238
2,400	.211	.217	.240	.242	.233
2,600	.207	.213	.235	.237	.229

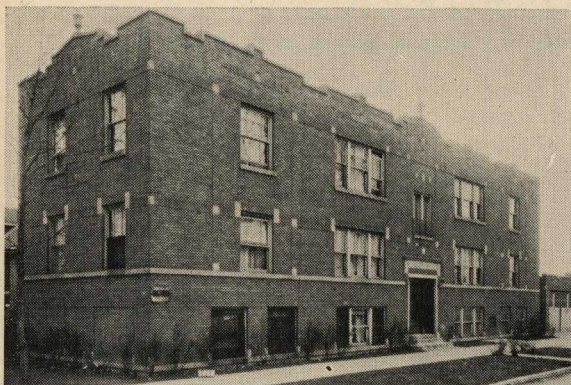
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.		
FLOORS: Steel joists, add to base price.....		.001
Light concrete slab, add to base price.....		.002
ROOF: Composition shingle, heavy, add to base price.....		.002
Slate shingle, light, add to base price.....		.003
Steel joists, add to base price.....		.001
INTERIOR FINISH: Metal lath base for plastering on partitions and ceilings, add to base price.....		.007
Red gum or plain white oak trim in living and dining rooms, add to base price.....		.010
Fireproof hall construction, add to base price.....		.001
SERVICE IMPROVEMENTS: No heating, deduct per room \$ 35.00		
Low pressure steam heating, add per room.....	30.00	
Vapor or hot water heating, add per room.....	40.00	
ATTIC: Floor of yellow pine, and rough stairway, add to base price .....		.007
Dormer windows, add per window.....	55.00	
FINISHED ROOMS: In basement, add per room.....	85.00	
In attic, add per room.....	185.00	
GARAGES: Built in, add per 2 cars.....	275.00	
add per 4 cars.....	570.00	

APARTMENTS 4 FAMILY (GOOD)—TWO STORY



A type of building constructed with 3 to 5 rooms and bath per unit; built from good architectural plans by a competent contractor; better than average of materials used throughout. Price range, \$10,000.00 to \$20,000.00.

Specifications

BASEMENTS: Area excavated to full depth of foundation wall, 12-in. concrete block or poured concrete wall.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding, cypress or red wood painted three coats lead and oil, stained $\frac{3}{8}$ -in. butt shingles or cement stucco on metal lath, 2-in. ply felt insulation on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center.

Base 2: 4-in. face brick on 8-in. tile or 4-in. common brick plastered on furred metal lath interior; sand stone or native stone veneer on main entrance.

Base 3: Cement stucco on 12-in. tile or 8-in common brick plastered on furred metal lath interior; sand stone or native stone veneer on main entrance.

Base 4: Stone facing with brick or tile backing, plastered on furred metal lath interior.

FLOORS: Basement, cement floor. 1-in. clear oak scraped and varnished on 1-in. sub-flooring in living and dining rooms of each unit; No. 2 oak in bed rooms; yellow pine in kitchen, 2-in.x10-in. joists, 16-in. on center, supported by cast iron columns and steel girders.

ROOF: Hip construction with $\frac{1}{2}$ -in. butt stained wood shingles or super-giant composition shingles, 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Plaster on metal lath or plaster board base, wall tinted or good grade of paper; birch, gum or oak doors and trims; plenty of cupboard space and built-in kitchen cabinets; good brick or tile mantels.

SERVICE IMPROVEMENTS: Low pressure steam heating system, thermostat control; 1 set vitreous china and enameled iron plumbing fixtures per each unit, grade B; tiled floor and wainscoting in bath room and main entrance; laundry trays and automatic water heaters; electric lighting with conduit wiring, good grade lighting fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(APARTMENTS 4 FAMILY (GOOD)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK	Base 3 STUCCO MASONRY	Base 4 STONE FACING
1,200	\$.377	\$.442	\$.425	\$.451
1,400	.355	.417	.400	.426
1,600	.336	.395	.378	.403
1,800	.325	.382	.366	.390
2,000	.316	.371	.356	.379
2,200	.308	.362	.347	.370
2,400	.301	.352	.339	.361
2,600	.295	.346	.333	.354
2,800	.291	.342	.328	.349
3,000	.287	.337	.323	.344

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for un-excavated portions in calculating the volume.

FLOORS: Steel joists, *add* to base price..... .001
Light concrete slab, *add* to base price..... .002ROOF: Composition shingles, medium, *deduct* from base price —.002
Slate shingles, medium, *add* to base price..... .004
Tile, interlocking, shingle effect, *add* to base price003
Tile, Spanish or French, red, *add* to base price..... .007
Tile, Spanish or French, green, *add* to base price.... .009
Steel joists, *add* to base price..... .001SERVICE IMPROVEMENTS: Hot air heating, *deduct* per room \$ 30.00
Vapor or hot water heating, *add* per room..... 10.00ATTIC: Floor of yellow pine with ordinary stairway, *add* to base price..... .010
Dormer windows, *add* per window..... 60.00FINISHED ROOMS: In basement, *add* per room..... 90.00
In attic, *add* per 1 room..... 200.00
per 2 rooms..... 310.00GARAGES: Built in, *add* per 2 cars..... 460.00
per 4 cars..... 825.00

APARTMENTS 6 FAMILY (CHEAP)—THREE STORY



A type of building usually constructed with 3 to 4 rooms and bath per unit; cheap grade of materials and poor workmanship. Price range, \$9,000.00 to \$16,000.00 per building.

Specifications

BASEMENTS: Area excavated to one-half depth of foundation wall, 8-in. concrete block or poured concrete walls; 10-in. walls for masonry.

WALLS:

Base 1: $\frac{1}{2}$ -in. lap siding painted two coats lead and oil or stained wood shingles on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath plastered interior, papered ordinary grade.

Base 2: 9-in. common brick; plastered interior, papered ordinary grade; double hung yellow pine sash.

Base 3: Cement stucco on metal lath; balance same construction as frame.

FLOORS: Basement, cement floor. 1-in. tongue and groove yellow pine or fir floors throughout on 2-in.x8-in. joists, 16-in. center, supported by wood columns and girders.

ROOF: Flat rolled composition on 1-in. sheathing, 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plastered partitions, papered ordinary grade on 2-in.x4-in. studding, 16-in. on center; ordinary grade yellow pine doors and trim throughout; scarcity of cupboard space or built-in fixtures.

SERVICE IMPROVEMENTS: Stove heat; 1 set cheap enameled iron plumbing, grade D, per unit; electric lighting with knob and tube wiring and cheap lighting fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(APARTMENTS 6 FAMILIES (CHEAP)—THREE STORIES, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

AREA Sq. Ft.	Base 1 FRAME	Base 2 COMMON BRICK	Base 3 STUCCO ON METAL LATH
1,000	.192	.225	.201
1,200	.179	.209	.187
1,400	.169	.197	.177
1,600	.161	.187	.168
1,800	.153	.177	.160
2,000	.150	.174	.157
2,200	.147	.170	.154
2,400	.144	.167	.151
2,600	.142	.164	.148

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.

WALLS: Cement stucco on wood lath and studding, use frame base price.

FLOORS: No. 2 grade oak in living and dining rooms, add to base price..... .003
 No. 2 grade oak throughout, add to base price..... .004

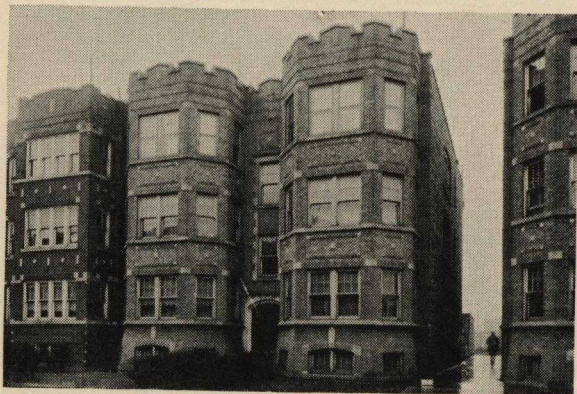
INTERIOR FINISH: Metal lath base for plastering on partitions and ceilings, add to base price..... .008
 Red gum or plain white oak trim in living or dining room, add to base price..... .014
 Fireproofed stair hall, add to base price..... .001

SERVICE IMPROVEMENTS: Hot air heating, add per room \$ 30.00
 Low pressure steam heating, add per room..... 65.00

GARAGES: Built in, add for 4 car..... 555.00
 add for 6 car..... 755.00

FINISHED ROOMS: In basement, add per room..... 80.00

APARTMENTS 6 FAMILY (AVERAGE) THREE STORY



A type of building usually constructed with 3 to 4 rooms and bath per unit; construction meets ordinary building code requirements. Price range, \$10,000.00 to \$20,000.00 per building.

Specifications

BASEMENTS: Area excavated to three-fourths depth of foundation walls, 10-in. concrete block or poured concrete walls; 12-in. walls on masonry.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding painted two coats lead and oil or stained wood shingles on 1 ply felt paper and 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center; wood lath and plaster interior, ordinary grade paper.

Base 2: Cement stucco on metal lath, 1 ply felt paper; balance same construction as frame.

Base 3: 4-in. face brick veneer, 1 ply felt paper; balance same construction as frame.

Base 4: 4-in. face brick with common brick or tile backing with plastered interior, papered ordinary grade.

Base 5: 8-in. common brick with plastered interior, papered ordinary grade.

FLOORS: Basement, cement floor. $\frac{5}{8}$ -in. No. 2 oak on 1-in. sub-flooring in living and dining rooms of each unit; balance, tongue and groove yellow pine flooring, supported by 2-in.x10-in. joists, 16-in. on center with cast iron columns and steel girders.

ROOF: Medium weight wood or composition shingles, hip or gable construction, 1-in. sheathing and 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Wood lath and plaster on 2-in.x4-in. studding, 16-in. on center; paper average grade; standard mill stock yellow pine doors and trim; average amount of cupboard space; built-in kitchen cabinets; 1 brick or tile mantel per unit.

SERVICE IMPROVEMENTS: Separate hot air furnace for each unit with coal bins and locker rooms; 1 set enameled iron plumbing fixtures, grade C, per unit, including laundry trays and automatic water heater; tiled floors in bathrooms and main entrance; electric lighting with knob and tube wiring with fair lighting fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(APARTMENTS 6 FAMILY (AVERAGE)—THREE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

AREA Sq. Ft.	Base 1 FRAME	Base 2 STUCCO ON METAL LATH	Base 3 FACE BRICK VENEER	Base 4 FACE BRICK	Base 5 COMMON BRICK
1,000	\$.290	\$.296	\$.319	\$.341	\$.315
1,200	.270	.276	.297	.317	.293
1,400	.255	.260	.280	.298	.276
1,600	.243	.249	.266	.284	.264
1,800	.234	.239	.256	.273	.254
2,000	.227	.231	.249	.264	.245
2,200	.222	.226	.242	.258	.240
2,400	.217	.221	.236	.252	.234
2,600	.213	.217	.232	.246	.230

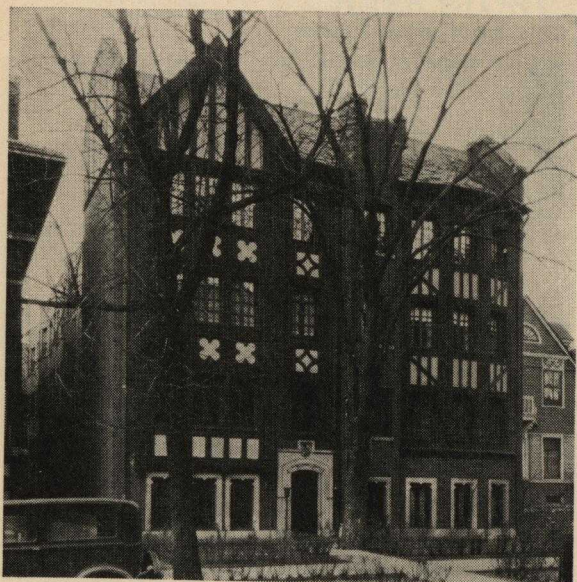
For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for unexcavated portion in calculating the volume.		
FLOORS: Steel joist floor construction, <i>add</i> to base price.....		.001
Light concrete slab, <i>add</i> to base price.....		.002
ROOF: Composition shingle, heavy, <i>add</i> to base price.....		.001
Slate shingle, light, <i>add</i> to base price.....		.002
Steel joist construction, <i>add</i> to base price.....		.001
INTERIOR FINISH: Metal lath base for plastering on partitions and ceilings, <i>add</i> to base price.....		.007
Red gum or plain white oak trim in living and dining room, <i>add</i> to base price.....		.010
Fireproof hall construction, <i>add</i> to base price.....		.001
SERVICE IMPROVEMENTS: No heating, <i>deduct</i> per room	\$ 35.00	
Low pressure steam heating, <i>add</i> per room.....	30.00	
Vapor or hot water heating, <i>add</i> per room.....	40.00	
ATTIC: Floor of yellow pine and rough stairway, <i>add</i> to base price .....		.005
Dormer windows, <i>add</i> per window.....	55.00	
FINISHED ROOMS: In basement, <i>add</i> per room.....	85.00	
In attic, <i>add</i> per 1 room.....	185.00	
<i>add</i> per 2 rooms.....	275.00	
GARAGES: Built in, <i>add</i> per 4 cars.....	570.00	
<i>add</i> per 6 cars.....	770.00	

APARTMENTS 6 FAMILY (GOOD)—THREE STORY



A type of building constructed with 3 to 5 rooms and bath per unit from good architectural plans, built by a competent contractor; better than average materials used throughout. Price range, \$15,000.00 to \$30,000.00.

Specifications

BASEMENTS: Area excavated to full depth of foundation wall, 12-in. concrete block or poured concrete wall.

WALLS:

Base 1: $\frac{3}{4}$ -in. lap siding, cypress or red wood painted three coats lead and oil, or stained $\frac{3}{8}$ -in. butt shingles or cement stucco on metal lath, two ply felt insulation on 1-in. sheathing, 2-in.x4-in. studding, 16-in. on center.

Base 2: 4-in. face brick on 8-in. tile or 4-in. common brick plastered on furred metal lath interior; sand stone or native stone veneer trim on main entrance.

Base 3: Cement stucco on 12-in. tile or 8-in. common brick plastered on furred metal lath interior; sand stone or native stone veneer trim on main entrance.

Base 4: Stone facing with brick or tile backing, plastered on furred metal lath interior.

FLOORS: Basement, cement floor. 1-in. clear oak scraped and varnished on 1-in. sub-flooring in living and dining rooms of each unit; No. 2 oak in bed rooms; yellow pine in kitchen; 2-in.x10-in. joists, 16-in. on center supported by cast iron columns and steel girders.

ROOF: Hip construction with $\frac{1}{2}$ -in. butt stained wood shingles or super-giant composition shingles, 2-in.x6-in. rafters, 16-in. on center.

INTERIOR FINISH: Plaster on metal lath or plaster board base, wall tinted or good grade of paper; birch, gum or oak doors and trims; plenty of cupboard space and built-in kitchen cabinets; good brick or tile mantels.

SERVICE IMPROVEMENTS: Low pressure steam heating system, thermostat control; 1 set vitreous china and enameled iron plumbing fixtures per each unit, grade B; tiled floor and wainscoting in bathroom and main entrance; laundry trays and automatic water heaters; electric lighting with conduit wiring, good grade lighting fixtures.

PORCHES: See Detail Section on Porches.

FOR ADDITIONAL IMPROVEMENTS, see section for Individual Costs.

(APARTMENTS 6 FAMILY (GOOD)—THREE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 FACE BRICK	Base 3 STUCCO ON MASONRY	Base 4 STONE FACING
1,200	\$.392	\$.441	\$.419	\$.453
1,400	.369	.415	.394	.426
1,600	.351	.395	.376	.404
1,800	.338	.379	.362	.388
2,000	.329	.368	.352	.377
2,200	.321	.359	.342	.368
2,400	.314	.351	.334	.358
2,600	.308	.344	.328	.351
2,800	.303	.338	.323	.344
3,000	.299	.333	.319	.339

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT TO BASE PRICE
BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement for un-excavated portion in calculating the volume.		
FLOORS: Steel joists, <i>add</i> to base price.....		.001
Light concrete slab, <i>add</i> to base price.....		.002
ROOF: Composition shingle, medium, <i>deduct</i> from base price		— .001
Slate shingle, medium, <i>add</i> to base price.....		.003
Tile interlocking, shingle effect, <i>add</i> to base price..		.002
Tile, Spanish or French, red, <i>add</i> to base price.....		.006
Tile, Spanish or French, green, <i>add</i> to base price....		.007
Steel joist construction, <i>add</i> to base price.....		.001
SERVICE IMPROVEMENTS: Hot air heating, <i>deduct</i> per room	\$ 30.00	
Vapor or hot water heating, <i>add</i> per room.....	10.00	
ATTIC: Floor of yellow pine with ordinary stairway, <i>add</i> to base price .....		.008
Dormer windows, <i>add</i> per window.....	65.00	
FINISHED ROOMS: In basement, <i>add</i> per room.....	90.00	
In attic, <i>add</i> per 1 room.....	200.00	
add per 2 rooms.....	310.00	
GARAGES: Built in, <i>add</i> per 4 cars.....	825.00	
add per 6 cars.....	1,025.00	

APARTMENT BUILDINGS—NON-FIREPROOF 2-3-4 STORIES (CHEAP)



A type of property usually found in cheap or industrial class neighborhoods and borders on the class of tenements.

Specifications

BASEMENT: Full concrete, with janitors quarters and general service laundry.

WALLS:

Type 1: Common brick construction all sides; yellow pine sash; cast stone sills and lintels.

Type 2: Cheap face brick front; small amount of stone trim on entrance; balance common brick; yellow pine sash; cast stone sills and lintels.

Type 3: Cheap face brick front and one side; small amount of stone trim on entrance; balance common brick; yellow pine sash; cast stone sills and lintels.

INTERIOR CONSTRUCTION: Ordinary wood joists supported by cast iron columns and steel beams or brick partition walls; wood lath and three coat plaster on 2-in.x4-in. stud interior partition; no sound proofing; cheap yellow pine doors and trim.

FLOORS: Basement, cement floor. Balance, 1-in. tongue and groove yellow pine or fir on sub-flooring, 2-in.x10-in. joist, 16-in. center.

ROOF: Flat composition on 1-in. sheathing and 2-in.x6-in. rafters.

SERVICE IMPROVEMENTS: Single pipe low pressure steam heating. Electric lighting, knob and tube wiring, cheap fixtures. One set cheap enameled iron plumbing fixtures per unit, grade D. Scarcity of cupboard space. No built-in fixtures of account. Main and service stairways wood construction.

(APARTMENTS—NON-FIREPROOF (CHEAP) Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

In calculating base price where there are more than one size apartments, use a mean average rate based on the number of apartments according to their size.

TWO STORY BUILDINGS

No. OF ROOMS PER UNIT	TYPE 1	TYPE 2	TYPE 3
1 Room Efficiency	\$.358	\$.374	\$.390
2 Rooms and Bath	.292	.308	.324
3 Rooms and Bath	.262	.278	.294
4 Rooms and Bath	.249	.265	.281
5 Rooms and Bath	.238	.254	.270

THREE STORY BUILDINGS

1 Room Efficiency	\$.395	\$.413	\$.431
2 Rooms and Bath	.320	.338	.356
3 Rooms and Bath	.288	.306	.324
4 Rooms and Bath	.274	.292	.310
5 Rooms and Bath	.261	.279	.297

FOUR STORY BUILDINGS

1 Room Efficiency	\$.416	\$.436	\$.456
2 Rooms and Bath	.336	.356	.376
3 Rooms and Bath	.302	.322	.342
4 Rooms and Bath	.287	.307	.327
5 Rooms and Bath	.273	.293	.313

Corrective Factors for Structural Deviations

Buildings with English basements with finished apartments other than janitor's quarters, allow \$1.10 per square foot of area so occupied plus \$350.00 for each complete set of plumbing fixtures.

Stores in English basement, allow 60 cents per square foot of area so occupied.

CENT CHARGES
TO
FLAT
CHARGES BASE PRICE

FLOORS:

Steel joists in place of wood joists, add to base price.....	.001
1/2-in. No. 2 grade oak floors in living rooms, add to base price .....	.003
1/2-in. No. 2 grade oak floors in entire apartments, add to base price .....	.004

INTERIOR FINISH:

Metal lath and plaster partitions and ceilings, add to base price .....	.008
Tile floors in bathrooms, add to base price.....	\$75.00
Red gum trim in part, add to base price.....	.014
Fireproofed stair hall, add to base price.....	.001

APARTMENT BUILDINGS—NON-FIREPROOF 2-3-4 STORIES (AVERAGE)



A type of property built to accommodate low rental tenants, constructed of average grade materials but without architectural supervision.

Specifications

BASEMENT: Full concrete basement, with concrete or brick walls. Plaster sheathed ceiling; janitor's quarters and one or more laundry rooms.

WALLS:

Type 1: Face brick front; common brick side and rear; wood sash. Small amount of terra cotta trim at entrance.

Type 2: Face brick front and one side or face brick front and court; balance common brick. Small amount of terra cotta trim at entrances.

Type 3: English basement type with basement and first floor heavily trimmed with stone or terra cotta front wall; balance common brick; wood sash.

Type 4: Same as above except front wall and one side or court trimmed as specified.

INTERIOR CONSTRUCTION: 2-in.x10-in. wood joists, 16-in. on center supported by steel frame or brick partition walls; wood lath and plaster on 2-in.x4-in. stud partitions; good grade yellow pine doors and trim. No sound proofing; entrance hall and service stairway enclosed by brick or tile walls; stairways of wood construction.

FLOORS: Basement, cement floor. Balance, 1½-in. oak on sub-flooring; entrance and bathroom floors tiled.

ROOF: Flat gravel covered composition on 1-in. sheathing and 2-in.x6-in. rafters, blind air space over top floor.

SERVICE IMPROVEMENTS: Single pipe low pressure steam heating system; electric lighting, conduit wiring and fair grade of fixtures. One set vitreous china and enameled plumbing fixtures per unit, grade C; small amount of built-in cabinet work.

(APARTMENT BUILDINGS—NON-FIREPROOF
2-3-4 STORIES (AVERAGE), Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

In calculating base price where there are more than one size apartments, use a mean average rate based on the number of apartments according to their size.

TWO STORY BUILDINGS

NO. OF ROOMS PER UNIT	TYPE 1	TYPE 2	TYPE 3	TYPE 4
1 Room Efficiency	\$.477	\$.487	\$.489	\$.499
2 Rooms and Bath	.420	.420	.422	.432
3 Rooms and Bath	.354	.364	.366	.376
4 Rooms and Bath	.329	.339	.341	.351
5 Rooms and Bath	.304	.314	.316	.326

THREE STORY BUILDINGS

1 Room Efficiency	\$.538	\$.538	\$.540	\$.548
2 Rooms and Bath	.454	.462	.464	.472
3 Rooms and Bath	.392	.400	.402	.410
4 Rooms and Bath	.364	.372	.374	.382
5 Rooms and Bath	.335	.343	.345	.353

FOUR STORY BUILDINGS

1 Room Efficiency	\$.562	\$.568	\$.570	\$.576
2 Rooms and Bath	.479	.485	.487	.493
3 Rooms and Bath	.414	.420	.422	.428
4 Rooms and Bath	.384	.390	.392	.398
5 Rooms and Bath	.354	.360	.362	.368

Corrective Factors for Structural Deviations

Buildings with English basements with finished apartments other than janitor's quarters, allow \$1.30 per square foot of area so occupied plus \$500.00 for each complete set of plumbing fixtures.

Stores in English basements, allow 70 cents per square foot of area so occupied.

	FLAT CENT CHARGES	TO BASE PRICE
FLOORS: Steel joists in floor construction, <i>add</i> to base price..		.001
INTERIOR FINISH: Metal lath base for plaster, <i>add</i> to base price .....		.007
Gum or oak trim in part, <i>add</i> to base price.....		.010
Stairway of steel construction, <i>add</i> to base price....		.001
Tile wall in bathroom, <i>add</i> to base price.....	\$100.00	
GARAGES: In basement, allow for fireproofing and special doors per car capacity.....	100.00	
Vapor heating, or two pipe steam system, allow per room extra	10.00	

APARTMENT BUILDINGS—NON-FIREPROOF 2-3-4 STORIES (GOOD)



A type of property built under architectural supervision to accommodate the better class of tenants and usually found in more concentrated, better grade of residential locations.

Specifications

BASEMENT: Full concrete basement with brick or concrete walls, plaster sheathed ceiling throughout, janitor's quarters and one or more finished laundry rooms.

WALLS:

Type 1: Face brick front, wall with good grade of common brick side and rear; cast stone or terra cotta trim on lower section and cornice and around main entrance.

Type 2: Same as above except front wall and one side wall or court wall trimmed as specified.

Type 3: English basement type with basement and first floor heavily trimmed with cast stone and terra cotta or timbered effect on upper story on front wall; balance good grade common brick; steel sash used throughout; oak doors and trim main entrance.

Type 4: Same as Type 3 except front wall and one side wall or court wall trimmed as specified.

INTERIOR CONSTRUCTION: 2-in.x12-in. joists, 16-in. on center, supported by steel frame and brick partition walls. Metal lath plaster on wood stud partitions; oak or gum doors and trim throughout. Sound proofing used between apartments and between hallways and apartments. Main entrance stairways and service stairway and hallways of fireproof construction. Stairs either concrete or steel.

FLOORS: Basement, cement floor. Balance 1-in. oak on sub-flooring and felt insulation. Main entrance and bath room floors tiled, with tiled wainscoting in bath rooms.

ROOF: Flat gravel covered composition on 1-in. sheathing and wood rafters; blind air space over top floor.

SERVICE IMPROVEMENTS: Two pipe, low pressure or vapor heating system, modern type radiators. Electric lighting with conduit wiring and good grade of fixtures. One set of vitreous china enameled iron plumbing fixtures per unit with shower over bath, grade B. Electrical refrigeration and built-in kitchen cabinet each unit; plenty of closet space.

FOR ADDITIONAL IMPROVEMENTS, see section on Individual Costs.

(APARTMENT BUILDINGS—NON-FIREPROOF (GOOD)
2-3-4 STORIES, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

In calculating base price where there are more than one size apartments, use a mean average rate based on the number of apartments according to their size.

TWO STORY BUILDINGS

NO. OF ROOMS PER UNIT	TYPE 1	TYPE 2	TYPE 3	TYPE 4
1 Room Efficiency	\$.617	\$.633	\$.630	\$.645
2 Rooms and Bath	.546	.558	.555	.566
3 Rooms and Bath	.461	.473	.470	.485
4 Rooms and Bath	.436	.448	.445	.460
5 Rooms and Bath	.412	.423	.420	.435

THREE STORY BUILDINGS

1 Room Efficiency	\$.693	\$.705	\$.700	\$.712
2 Rooms and Bath	.602	.615	.613	.625
3 Rooms and Bath	.521	.533	.530	.542
4 Rooms and Bath	.482	.494	.491	.503
5 Rooms and Bath	.455	.467	.464	.476

FOUR STORY BUILDINGS

1 Room Efficiency	\$.731	\$.743	\$.741	\$.753
2 Rooms and Bath	.638	.650	.648	.660
3 Rooms and Bath	.541	.553	.551	.563
4 Rooms and Bath	.505	.517	.515	.527
5 Rooms and Bath	.481	.493	.491	.503

Corrective Factors for Structural Deviations

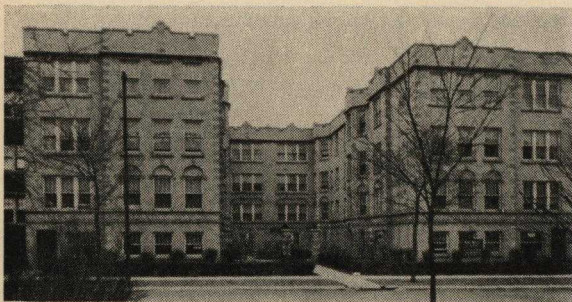
BASEMENT:

Buildings with English basements with finished apartments other than janitor's quarters, allow \$1.75 per square foot of area, so occupied, plus \$750.00 for each complete set of plumbing fixtures and \$150.00 for tile work.

Stores in English basements, allow 90 cents per square foot of area so occupied.

	FLAT CHARGES	CENT TO BASE PRICE
CONSTRUCTION: Steel joists in place of wood, add to base price .....		.001
INTERIOR FINISH: Mahogany or walnut trim and doors, add to base price.....		.010
SERVICE IMPROVEMENTS: Low pressure, 1 pipe heating, deduct per room.....	\$10.00	
BUILT-IN GARAGE: Allow for fire proofing and special doors, per car capacity.....	115.00	

APARTMENT BUILDINGS—FIRE-RESISTIVE (AVERAGE)



A type of property built to accommodate low rental tenants. Constructed from the average grade materials but without architectural supervision.

Specifications

BASEMENT: Full concrete basement with concrete or brick walls, metal lath and plaster sheathed ceiling throughout. Janitor's quarters and one or more laundry rooms.

WALLS AND INTERIOR CONSTRUCTION:

Type 1: Face brick bearing wall front, with common brick sides and rear; small amount of terra cotta trim at entrance and cornice. Light structural steel frame with arched or keyed tiled floors and concrete fill. Tile partitions between apartments; balance metal lath and plaster on wood studding; double hung wood sash windows; good grade of yellow pine or gum doors and trim. Main and service stairways of concrete or steel construction.

Type 2: Same as above except front wall and one side wall or court wall trimmed as specified.

Type 3: Same as Type 1 excepting interior frame is of reinforced concrete skeleton frame with concrete slab floor.

Type 4: Same as Type 3 excepting front wall and one side wall or court wall trimmed as specified.

Type 5: English basement type with same wall and interior construction as Type 2.

Type 6: English basement type with same wall and interior construction as Type 4.

FLOORS: Basement, cement floor. Balance, 1-in. No. 2 grade oak on sleepers set in concrete. Tile floors in entrance hall and bath rooms.

ROOF: Flat gravel covered composition on concrete slab; air space over top story created by drop ceiling.

SERVICE IMPROVEMENTS: Single pipe, low pressure heating system. Electric lighting with conduit wiring and fair grade of fixtures. One set vitreous china enameled iron plumbing fixtures per unit, shower over bath, grade C. Small amount of built-in cabinet work and cheap electrical refrigeration.

FOR ADDITIONAL IMPROVEMENTS, see section on Individual Costs.

(APARTMENT BUILDINGS—FIRE RESISTIVE (AVERAGE) Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

In calculating base price where there are more than one size apartments, use a mean average rate based on the number of apartments according to their size.

TWO AND THREE STORY BUILDINGS

NO OF ROOMS PER UNIT	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6
1 Room Efficiency	\$.511	\$.528	\$.494	\$.511	\$.548	\$.531
2 Rooms and Bath	.446	.463	.432	.455	.483	.475
3 Rooms and Bath	.410	.427	.391	.408	.447	.428
4 Rooms and Bath	.398	.415	.378	.395	.435	.415
5 Rooms and Bath	.377	.394	.356	.373	.414	.393

THREE AND FOUR STORY BUILDINGS

1 Room Efficiency	\$.574	\$.593	\$.556	\$.575	\$.608	\$.590
2 Rooms and Bath	.511	.530	.492	.511	.545	.526
3 Rooms and Bath	.455	.474	.435	.454	.489	.469
4 Rooms and Bath	.439	.458	.418	.437	.473	.452
5 Rooms and Bath	.423	.442	.401	.420	.457	.435

FIVE AND SIX STORY BUILDINGS

1 Room Efficiency	\$.612	\$.633	\$.591	\$.612	\$.645	\$.625
2 Rooms and Bath	.545	.566	.523	.544	.578	.556
3 Rooms and Bath	.486	.507	.463	.484	.519	.496
4 Rooms and Bath	.465	.486	.442	.463	.498	.475
5 Rooms and Bath	.446	.467	.422	.443	.479	.455

Corrective Factors for Structural Deviations

Buildings with English basements with finished apartments other than janitor's quarters, add \$1.30 per square foot of area so occupied, plus \$500.00 for each complete set of plumbing.

Stores in English basements, add 70 cents per square foot of area so occupied.

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
FLOORS: No. 1 grade oak on sleepers, add to base price.....		.006
INTERIOR FINISH: Oak or birch trim in part, add to base price .....		.010
Tile wall in bathroom, per unit.....	\$100.00	
GARAGE: In basement, allowance for special equipment, see section on Built-In-Garages.		
HEATING: Vapor or 2 pipe steam system, allow per room extra		10.00

APARTMENT BUILDINGS—FIRE-RESISTIVE (GOOD)



Type of property built to accommodate medium rental tenants. Constructed from the average grade of materials but without architectural supervision.

Specifications

BASEMENT: Full concrete basement with concrete or brick walls; metal lath and plaster sheathed ceiling throughout. Janitor's quarters and one or more laundry rooms.

WALLS AND INTERIOR CONSTRUCTION:

Type 1: Face brick bearing wall front with common brick sides and rear. Cast stone or terra cotta trim at entrance and cornice, timbered effect on upper stories. Light structural steel frame with arched or keyed tiled floors and concrete fill. Tile partitions between apartments; balance, metal lath and plaster on wood studding; metal sash windows; good grade of yellow pine or gum doors and trim. Main and service stairways of concrete or steel construction with hallways and stair-tower of fireproofed construction.

Type 2: Same as above except front wall and one side wall or court wall trimmed as specified.

Type 3: Same as Type 1 excepting interior frame is of reinforced concrete skeleton frame with concrete slab floor.

Type 4: Same as Type 3 except front wall and one side wall or court wall trimmed as specified.

Type 5: English basement type with same wall and interior construction as Type 2.

Type 6: English basement type with same wall and interior construction as Type 4.

FLOORS: Basement, cement floor. Balance, 1-in. No. 1 grade oak on sleepers set in concrete or cemented parquet flooring. Tile floors in entrance hall and bathrooms.

ROOF: Flat gravel covered composition on concrete slab; air space over top story created by drop ceiling.

SERVICE IMPROVEMENTS: Two pipe, low pressure or vapor heating system. Electric lighting with conduit wiring and good grade of fixtures. One set of vitreous china enameled iron plumbing fixtures per unit, shower over bath, grade B. Tiled wainscoting in bathrooms. Built-in cabinet work and electrical refrigeration. Plenty of closet space. Incinerators and laundry dryers.

FOR ADDITIONAL IMPROVEMENTS, see section on Individual Costs.

(APARTMENT BUILDINGS—FIRE RESISTIVE (GOOD) Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

In calculating base price where there are more than one size apartments, use a mean average rate based on the number of apartments according to their size.

TWO AND THREE STORY BUILDINGS

NO OF ROOMS PER UNIT	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6
1 Room Efficiency	\$.627	\$.648	\$.607	\$.628	\$.668	\$.648
2 Rooms and Bath	.571	.592	.550	.571	.612	.592
3 Rooms and Bath	.506	.527	.484	.505	.547	.525
4 Rooms and Bath	.494	.515	.471	.492	.535	.512
5 Rooms and Bath	.463	.484	.439	.460	.504	.480

THREE AND FOUR STORY BUILDINGS

1 Room Efficiency	\$.705	\$.728	\$.684	\$.707	\$.743	\$.722
2 Rooms and Bath	.637	.660	.615	.638	.675	.653
3 Rooms and Bath	.564	.587	.541	.564	.602	.579
4 Rooms and Bath	.540	.563	.516	.539	.578	.554
5 Rooms and Bath	.516	.539	.501	.514	.554	.529

FIVE AND SIX STORY BUILDINGS

1 Room Efficiency	\$.752	\$.777	\$.730	\$.755	\$.789	\$.767
2 Rooms and Bath	.680	.705	.657	.682	.717	.694
3 Rooms and Bath	.600	.625	.577	.602	.637	.614
4 Rooms and Bath	.574	.599	.550	.575	.611	.587
5 Rooms and Bath	.547	.572	.523	.548	.584	.560

Corrective Factors for Structural Deviations

Buildings with English basements with finished apartments other than janitor's quarters, allow \$1.75 per square foot of area so occupied, plus \$750.00 for each complete set of plumbing fixtures and \$150.00 for tile work.

Stores in English basements, allow 90 cents per square foot of area so occupied.

CENT CHARGES
FLAT TO
CHARGES BASE PRICE

INTERIOR FINISH: Mahogany or walnut trim and doors,
add to base price.....

.010

SERVICE IMPROVEMENTS: Low pressure, 1 pipe heat-
ing system, deduct per room.....

\$10.00

BUILT-IN GARAGE: See special section on Built-In Ga-
rages for special equipment.

APARTMENT BUILDINGS—FIRE-PROOF—(GOOD)



A type of property built under architectural supervision to accommodate better class of tenants and usually found in the more concentrated better grade of residential locations.

Specifications

BASEMENT: Full concrete basement with concrete or brick walls, metal lath and plaster sheathed ceiling throughout. Janitor's quarters and one or more laundry rooms.

WALLS AND INTERIOR CONSTRUCTION:

Type 1: Face brick curtain wall front with common brick sides and rear; cast stone or terra cotta trim on first floor and cornice and main entrance. Structural steel interior framing with arched or keyed tile floors and concrete fill. Tile or Pyrobar partitions, with antique oak or birch doors and trim; metal sash windows throughout; main and service stairways of concrete or steel construction.

Type 2: Same as above except front wall and one side wall or court wall trimmed as specified.

Type 3: Same as Type 1 excepting interior framing is of reinforced concrete skeleton frame with concrete floor slab.

Type 4: Same as Type 3 excepting front wall and one side wall or court wall trimmed as specified.

Type 5: English basement type, the same wall and interior construction as Type 2.

Type 6: English basement type, the same wall and interior construction as Type 4.

FLOORS: Basement, cement floor. Ceramic tile on concrete in corridors, entrance lobby and bathrooms. No. 1 grade oak on sleepers set in concrete or cemented parquet flooring in apartments.

ROOF: Built up composition on concrete slab; air space over top story created by drop ceiling.

SERVICE IMPROVEMENTS: Two pipe, low pressure or vapor heating system with modern type radiators. Electric lighting with conduit wiring and good grade of lighting fixtures. One set of vitreous china and enameled iron plumbing fixtures per unit, with shower over bath, grade B. Tiled wainscoting in bath room. Electric refrigeration and built-in kitchen cabinet each unit; plenty of closet space; also incinerators and laundry dryers.

FOR ADDITIONAL IMPROVEMENTS, see section on Individual Costs.

(APARTMENT BUILDINGS—FIRE-PROOF (GOOD) Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

In calculating base price where there are more than one size apartments, use a mean average rate based on the number of apartments according to their size.

TWO STORY BUILDINGS

NO OF ROOMS PER UNIT	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6
1 Room Efficiency	\$.658	\$.680	\$.638	\$.660	\$.700	\$.680
2 Rooms and Bath	.594	.616	.573	.595	.636	.615
3 Rooms and Bath	.528	.550	.516	.538	.570	.558
4 Rooms and Bath	.507	.529	.484	.506	.549	.526
5 Rooms and Bath	.486	.508	.462	.484	.520	.504

THREE STORY BUILDINGS

1 Room Efficiency	\$.737	\$.762	\$.716	\$.741	\$.777	\$.756
2 Rooms and Bath	.667	.692	.645	.670	.707	.685
3 Rooms and Bath	.597	.622	.554	.599	.637	.614
4 Rooms and Bath	.565	.590	.531	.566	.605	.581
5 Rooms and Bath	.532	.557	.506	.532	.572	.547

FOUR STORY BUILDINGS

1 Room Efficiency	\$.797	\$.824	\$.774	\$.801	\$.836	\$.811
2 Rooms and Bath	.727	.754	.704	.731	.776	.741
3 Rooms and Bath	.658	.685	.634	.661	.697	.671
4 Rooms and Bath	.621	.648	.596	.623	.660	.633
5 Rooms and Bath	.580	.607	.554	.581	.619	.591

Corrective Factors for Structural Deviations

Buildings with English basements with finished apartments other than janitor's quarters, allow \$1.75 per square foot of area so occupied plus \$750.00 for each complete set of plumbing fixtures and \$150.00 for tile work.

Stores in English basements, allow 90 cents per square foot of area so occupied.

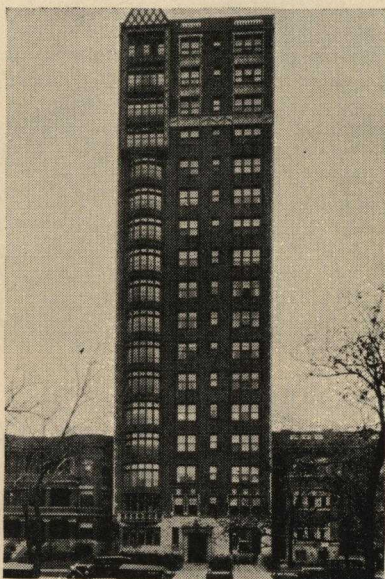
CENT CHARGES
FLAT TO
CHARGES BASE PRICE

INTERIOR FINISH: Mahogany or walnut trim and doors,
add to base price..... .010

SERVICE IMPROVEMENTS: Low pressure, 1 pipe heating system, deduct per room..... \$10.00

BUILT-IN GARAGE: See special section on Built-In Garages for special equipment.

APARTMENT BUILDINGS—FIRE-PROOF (EXPENSIVE)



A type of property built under architectural supervision to accommodate better class of tenants and usually found in the more concentrated better grade of residential locations.

Specifications

BASEMENT: Full concrete basement with reinforced concrete or brick walls, metal lath and plaster sheathed ceiling throughout. Janitor's quarters and one or more laundry rooms.

WALLS AND INTERIOR CONSTRUCTION:

Type 1: Face brick curtain wall front, with common brick sides and rear; cast stone or terra cotta trim on first floor and cornice and main entrance. Tile or concrete protected structural steel interior framing with arched or keyed tile floors and concrete fill. Tile or Pyro-bar partitions, with antique oak or birch doors and trim; metal sash windows and antique oak, walnut or metal doors throughout; main and service stairways of concrete or steel construction.

Type 2: Same as above except front wall and one side wall or court wall trimmed as specified.

Type 3: Same as Type 1 excepting interior framing is of reinforced concrete skeleton frame with concrete floor slab.

Type 4: Same as Type 3 excepting front wall and one side wall or court wall trimmed as specified.

Type 5: English basement type, the same wall and interior construction as Type 2.

Type 6: English basement type, the same wall and interior construction as Type 4.

FLOORS: Basement, cement floor. Ceramic tile on concrete in corridors, entrance lobby and bathrooms. No. 1 grade oak on sleepers set in concrete or cemented parquet flooring in apartments.

ROOF: Built up composition on concrete slab; air space over top story created by drop ceiling.

SERVICE IMPROVEMENTS: Two pipe, low pressure or vapor heating system with modern type radiators. Electric lighting with conduit wiring and high grade of lighting fixtures. One set of vitreous china and enameled iron plumbing fixtures per unit, with shower over bath, Grade A. Tiled floor and wainscoting in bathroom. Electric refrigeration and built-in kitchen cabinet each unit; plenty of closet space, also incinerators, and laundry dryers. Automatic electric elevators.

FOR ADDITIONAL IMPROVEMENTS, see section on Individual Costs.

(SMALL APARTMENT BUILDINGS—FIRE-PROOF (EXPENSIVE) Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

In calculating base price where there are more than one size apartments, use a mean average rate based on the number of apartments according to their size.

TWO AND THREE STORY BUILDINGS

(No Elevator Equipment)

NO OF ROOMS PER UNIT	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5	TYPE 6
1 Room Efficiency	\$.767	\$.794	\$.737	\$.764	\$.819	\$.789
2 Rooms and Bath	.710	.737	.678	.705	.762	.730
3 Rooms and Bath	.653	.680	.619	.646	.705	.671
4 Rooms and Bath	.621	.648	.585	.612	.673	.637
5 Rooms and Bath	.571	.598	.503	.530	.623	.555

FOUR AND FIVE STORY BUILDINGS

1 Room Efficiency	\$.862	\$.892	\$.817	\$.847	\$.912	\$.867
2 Rooms and Bath	.799	.829	.762	.792	.849	.812
3 Rooms and Bath	.733	.763	.692	.722	.783	.742
4 Rooms and Bath	.688	.718	.635	.665	.738	.685
5 Rooms and Bath	.642	.672	.605	.635	.692	.655

SIX STORY BUILDINGS AND OVER

1 Room Efficiency	\$.920	\$.952	\$.880	\$.912	\$.967	\$.917
2 Rooms and Bath	.848	.880	.806	.838	.895	.853
3 Rooms and Bath	.772	.808	.732	.764	.823	.779
4 Rooms and Bath	.730	.762	.684	.716	.777	.731
5 Rooms and Bath	.680	.712	.632	.664	.727	.679

Corrective Factors for Structural Deviations

Buildings with English basements with finished apartments other than janitor's quarters, allow 2.00 per square foot of area so occupied, plus \$1,250.00 for each complete set of plumbing fixtures and \$250.00 for tile work.

Stores in English basement, allow \$1.10 per square foot of area so occupied.

BUILT-IN GARAGES: See special section on Built-in Garages for special equipment.

STORES (CHEAP)—ONE STORY



A type of building usually found in the cheaper suburban commercial centers of cities or in rural districts. Cheap material and workmanship throughout.

Specifications

EXCAVATION: Sufficient for footings only.

FOUNDATION: Brick piers or equal under frame construction. Full footing foundation under masonry construction.

WALLS:

Base 1: 1-in. drop siding on 2-in.x4-in. studding. Wood frame double strength glass store front no return. Remainder of windows double hung yellow pine sash. No building paper or sheathing. Plastered inside.

Base 2: Stucco on wood lath, 2-in.x4-in. studding; balance same construction as frame.

Base 3: 9-in. common brick plastered inside; balance same construction as frame.

Base 4: Cement block with face brick front; balance same construction as frame.

FLOORS: Single 1-in. yellow pine on 2-in.x12-in. joists, 12-in. on center.

ROOF: Flat with three ply composition on $\frac{7}{8}$ -in. sheathing and 2-in.x6-in. rafters.

SERVICE IMPROVEMENTS: Drop cord electric lights, knob and tube wiring. Plumbing, Grade D. Fixtures, 1 sink and 1 toilet. Stove heat.

(STORES (CHEAP)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FRAME	Base 2 STUCCO	Base 3 COMMON BRICK	Base 4 CONCRETE BLOCK
800	\$.162	\$.171	\$.206	\$.178
900	.155	.164	.197	.170
1,000	.149	.157	.189	.164
1,100	.145	.153	.184	.159
1,200	.141	.149	.179	.155
1,300	.137	.145	.174	.151
1,400	.134	.142	.170	.147
1,500	.132	.139	.167	.145
1,600	.130	.137	.165	.143
1,700	.128	.135	.163	.141
1,800	.126	.133	.161	.139
1,900	.125	.132	.159	.137
2,000	.124	.131	.158	.136

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	CENT CHARGES
FLAT	TO
CHARGES	BASE PRICE

BASEMENT: For full basement with cement floor, use average one story Store base.

ROOF: Sheet metal, tin, add to base price..... .006

Large Area Store Buildings

Use department store classifications, making deduction of 10% for lack of special equipment such as elevators and stairways.

STORES (AVERAGE)—ONE STORY



A type of building generally found in the suburban commercial centers of the larger cities. Quality of workmanship and materials, average. No architectural supervision but meets good building code requirements.

Specifications

EXCAVATION: Full excavation, earth spread over lot and around building.

FOUNDATION: 8-in. concrete block or poured concrete with sufficient footing supports; 10-in. wall on brick buildings.

WALLS:

Base 1: $\frac{5}{8}$ -in. lap siding painted two coats lead and oil, 1-in. sheathing, one ply felt insulation on 2-in.x4-in. studding, 16-in. on center. Wood lath and plastered interior, painted finish. Wood and metal frame with double strength glass store front. Small returns at entrance.

Base 2: Cement stucco on 8-in. construction tile; balance, same construction as frame.

Base 3: 9-in. common brick plastered interior; balance, same construction as frame.

Base 4: 4-in. face brick veneer on frame; balance, same construction as frame.

Base 5: 4-in. face brick ordinary grade backed up with 4-in. common brick plastered interior; balance, same construction as frame.

Base 6: Front of face brick; balance, 9-in. common brick; balance, same construction as frame.

FLOORS: Basement, cement floor. $\frac{5}{8}$ -in. oak on 1-in. sub-floor in store room.

ROOF: Flat with mansard effect in front, four ply composition on 1-in. sheathing and 2-in.x6-in. rafters.

INTERIOR FINISH: Ordinary millstock yellow pine doors and trim.

SERVICE IMPROVEMENTS: Hot air furnace; one set of plumbing fixtures, grade C, consisting of sink, lavatory, and toilet. Electric lighting with knob and tube wiring and ordinary fixtures.

(STORES (AVERAGE)—ONE STORY)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FRAME	Base 2 STUCCO	Base 3 COMMON BRICK	Base 4 FACE BRICK VENEER	Base 5 FACE BRICK	Base 6 FACE BRICK FRONT
800	\$.180	\$.189	\$.205	\$.207	\$.214	\$.206
900	.172	.180	.196	.198	.204	.197
1,000	.166	.174	.189	.191	.196	.190
1,100	.161	.169	.183	.185	.190	.184
1,200	.156	.164	.177	.179	.184	.178
1,300	.152	.160	.172	.174	.179	.173
1,400	.149	.156	.168	.170	.175	.169
1,500	.147	.154	.166	.168	.172	.167
1,600	.145	.152	.164	.166	.169	.165
1,700	.143	.150	.162	.164	.167	.163
1,800	.141	.148	.160	.162	.165	.161
1,900	.139	.146	.158	.160	.163	.159
2,000	.137	.144	.156	.158	.161	.157
2,200	.135	.142	.154	.156	.159	.155
2,400	.132	.140	.152	.154	.157	.153
2,600	.129	.138	.150	.152	.155	.151
2,800	.127	.136	.149	.151	.154	.150
3,000	.126	.135	.148	.150	.153	.149

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
TO
FLAT
CHARGES BASE PRICE

BASEMENT: No basement or partial basement, allow six feet in hypothetical height measurement in calculating the volume.

Brick walls, add 6% to base price.....

FLOORS: Hard pine floor, deduct from base price..... —.009

Composition on wood, add to base price..... .006

No cement floor in basement, deduct from base price —.006

ROOF: Sheet metal, tin, add to base price..... .012

SERVICE IMPROVEMENTS: Stove heating, deduct each unit \$250.00

Low pressure steam heating, add..... 200.00

Large Area Store Buildings

Use department store classifications, making deduction of 10% for lack of special equipment such as elevators and stairways.

STORES (GOOD)—ONE STORY



A type of building generally found in the suburban commercial centers. Quality of material and workmanship above average. Built under architectural supervision.

Specifications

EXCAVATION: Full excavation.

FOUNDATION: 10-in. concrete block or poured concrete.

WALLS:

Base 1: Cement stucco on 8-in. construction tile, plastered inside with good grade of painted finish. Metal frame with plate glass store front, 3 foot to 4 foot returns at entrance.

Base 2: 9-in. common brick, plastered inside with terra cotta front.

Base 3: 9-in. common brick, plastered inside with front of modernistic glass, formica, etc.

Base 4: 4-in. face brick backed up with 4-in. common brick and plastered inside.

Base 5: 4-in. face brick veneer on frame, 2-in.x4-in. studding.

FLOORS: Basement, cement floor. 1-in. hardwood floor on 1-in. sub-floor in store room.

ROOF: Flat with mansard effect in front. Five ply composition on 1-in. sheathing and 2-in.x6-in. rafters.

INTERIOR FINISH: Hardwood doors and trim. Storeroom attractively decorated.

SERVICE IMPROVEMENTS: Low pressure steam heating. Electric lighting with conduit wiring and a good grade of fixtures. Two wash rooms with one toilet, one lavatory, and one sink in each.

(STORE (GOOD)—ONE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 STUCCO	Base 2 COMMON BRICK AND TERRA COTTA	Base 3 COMMON BRICK WITH SPECIAL FRONT	Base 4 FACE BRICK	Base 5 FACE BRICK VENEER
800	\$.302	\$.324	\$.326	\$.331	\$.320
900	.289	.310	.312	.316	.306
1,000	.279	.299	.301	.306	.296
1,100	.270	.290	.292	.296	.286
1,200	.262	.281	.283	.287	.278
1,300	.256	.274	.276	.279	.271
1,400	.251	.267	.269	.273	.265
1,500	.246	.262	.264	.268	.260
1,600	.242	.258	.260	.263	.256
1,700	.239	.254	.256	.259	.252
1,800	.236	.250	.252	.256	.248
1,900	.233	.247	.249	.252	.245
2,000	.230	.244	.246	.248	.242
2,200	.224	.238	.240	.242	.235
2,400	.220	.233	.235	.237	.231
2,600	.216	.229	.231	.233	.227
2,800	.213	.226	.228	.230	.224
3,000	.211	.224	.226	.228	.222

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
CONSTRUCTION: Steel joists, add to base price.....		.002
ROOF: Sheet metal, tin, add to base price.....		.010

Large Area Store Buildings

Use department store classifications, making deduction of 10% for lack of special equipment such as elevators and stairways.

STORES AND APARTMENT (CHEAP)—TWO STORY



A type of building usually found in the cheap or industrial neighborhoods or in rural districts. Cheap material and workmanship throughout.

Specifications

EXCAVATION: Sufficient for footings only.

FOUNDATION: Full footing foundation of 10-in. concrete block or poured concrete.

WALLS:

Base 1: Stucco on wood lath on 2-in.x4-in. studding. Wood frame double strength glass store front, no return. Remainder of windows double hung yellow pine sash.

Base 2: Common brick construction all sides; cast stone sills and lintels; balance, same construction as stucco.

Base 3: Cheap face brick front; balance, same construction as common brick.

Base 4: Cheap face brick front and one side; balance, same construction as common brick.

FLOORS: 1-in. tongue and groove yellow pine or fir on 2-in.x10-in. joists, 16-in. on center.

ROOF: Flat composition on 1-in. sheathing and 2-in.x6-in. rafters.

INTERIOR CONSTRUCTION: Ordinary wood joists supported by cast iron columns and steel beams or brick partition walls; wood lath and three coat plaster on 2-in.x4-in. studding. Store painted and apartments papered cheap grade. Cheap yellow pine doors and trim.

SERVICE IMPROVEMENTS: Stove heating. Drop cord electric lighting with knob and tube wiring. Plumbing, grade D, with one set of cheap enamel fixtures in the apartment and one sink and one toilet in the store. Scarcity of cupboard space. No built-in fixtures. Stairways of wood construction.

(STORES AND APARTMENT (CHEAP)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 STUCCO	Base 2 COMMON BRICK	Base 3 FACE BRICK FRONT	Base 4 FACE BRICK FRONT AND 1 WALL
800	\$.196	\$.234	\$.237	\$.245
900	.187	.224	.226	.234
1,000	.180	.215	.218	.225
1,100	.175	.209	.212	.219
1,200	.170	.203	.206	.212
1,300	.165	.197	.200	.206
1,400	.162	.193	.196	.203
1,500	.160	.191	.193	.200
1,600	.158	.189	.191	.197
1,700	.156	.187	.189	.195
1,800	.154	.184	.187	.193
1,900	.152	.182	.185	.191
2,000	.150	.180	.183	.189

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
If second floor is divided into more than one apartment, allow for each additional apartment.....	\$350.00	
1½-in. No. 2 grade oak floor in living room, add to base price .....		.004
Tile floor in bath room, add.....	75.00	
Sheet metal, tin, roof, add to base price.....		.005

STORES AND APARTMENT (AVERAGE) TWO STORY



A type of building generally found in the suburban commercial centers of the larger cities. Quality of workmanship and materials average. No architectural supervision but meets good building code requirements.

Specifications

BASEMENT: Full concrete basement with storage and laundry rooms.

WALLS:

Base 1: Cement stucco on construction tile, plastered interior. Wood and metal frame store front with double strength glass.

Base 2: Common brick; balance, same construction as stucco.

Base 3: Face brick front, common brick side and rear. Small amount of terra cotta trim at entrances; balance, same construction as stucco.

Base 4: Same as above except front wall and one side of face brick.

Base 5: 4-in. face brick backed up with 4-in. common brick; balance of construction, same as given above.

FLOORS: Basement, cement floor. $\frac{5}{8}$ -in. oak floor on 1-in. sub-floor in store and apartment.

ROOF: Flat composition with mansard effect.

INTERIOR CONSTRUCTION: 2-in.x10-in. wood joists, 16-in. on center, supported by cast iron columns and steel beams. Wood lath and plaster on 2-in.x4-in. stud partitions. Good grade yellow pine doors and trim. Entrance hall and stairway enclosed by brick or tile walls; wooden stairways.

SERVICE IMPROVEMENTS: Single pipe, low pressure steam heating system; electric lighting, conduit wiring and fair grade of fixtures. Plumbing, grade C; one set of vitreous china and enameled fixtures in apartment; 1 toilet, 1 sink and 1 lavatory in store. Small amount of built-in cabinet work in apartment.

(STORES AND APARTMENT (AVERAGE)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 STUCCO	Base 2 COMMON BRICK	Base 3 FACE BRICK FRONT	Base 4 FACE BRICK FRONT AND ONE SIDE	Base 5 FACE BRICK
800	\$.243	\$.262	\$.265	\$.270	\$.276
900	.232	.250	.253	.258	.264
1,000	.224	.242	.245	.250	.254
1,100	.217	.234	.237	.242	.246
1,200	.210	.227	.230	.235	.238
1,300	.205	.221	.224	.229	.232
1,400	.202	.217	.220	.225	.228
1,500	.199	.214	.217	.221	.224
1,600	.196	.211	.214	.218	.220
1,700	.193	.208	.211	.215	.216
1,800	.191	.205	.208	.212	.213
1,900	.189	.202	.205	.209	.210
2,000	.187	.200	.203	.204	.207
2,200	.184	.197	.199	.200	.202
2,400	.181	.194	.195	.196	.198
2,600	.179	.192	.193	.194	.195
2,800	.177	.190	.191	.192	.193
3,000	.175	.188	.189	.190	.191

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

FLAT	CENT CHARGES
CHARGES	TO BASE PRICE

If second floor is divided into more than one apartment, allow for each additional apartment..... \$500.00

FLOORS: Steel joists in floor construction, add to base price .001

INTERIOR FINISH: Metal lath base for plaster, add to base price007

Gum or oak trim in apartment, add to base price.... .010

Stairway of steel construction, add to base price.... .001

Tile walls in bathrooms, add per bathroom..... 100.00

ROOF: Sheet metal, tin, add to base price..... .008

STORES AND APARTMENT (GOOD)—TWO STORY



A type of building found in the better grade suburban commercial centers. Quality of workmanship and material above the average. Built under architectural supervision.

Specifications

BASEMENT: Full concrete basement with segregated storage and laundry rooms.

WALLS:

Base 1: Face brick front with good grade of common brick side and rear; cast stone or terra cotta trim and cornice around main entrance. Metal frame with plate glass store front and 3 to 4 foot returns at entrance.

Base 2: Same as above except front and one side wall of face brick and trimmed as specified.

Base 3: 4-in. face brick backed up with common brick or construction tile.

FLOORS: Basement, cement floor. Hardwood or composition on reinforced concrete in store. Hardwood in apartment. Main entrance, bathroom, and washroom floors tiled.

ROOF: Flat gravel covered composition on 1-in. sheathing and wood rafters; blind air space over top floor.

INTERIOR CONSTRUCTION: 2-in.x12-in. joists, 16-in. on center, supported by steel frame and brick partition walls. Metal lath plaster on wood stud partitions. Oak or gum doors and trim throughout. Sound proofing used between apartment and store and between hallways and apartment. Main entrance stairway, service stairway, and hallways of fireproof construction. Stairs, either concrete or steel.

SERVICE IMPROVEMENTS: Low pressure steam heating, modern type radiators. Electric lighting with conduit wiring and good grade of fixtures. One set of vitreous china enameled iron plumbing fixtures in the apartment. Two washrooms in store with one toilet, one lavatory, and one sink in each. Electrical refrigeration and built-in kitchen cabinet in the apartment. Plenty of closet space.

(STORES AND APARTMENT (GOOD)—TWO STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 FACE BRICK FRONT	Base 2 FACE BRICK FRONT AND ONE SIDE	Base 3 FACE BRICK
1,000	\$.388	\$.400	\$.411
1,100	.375	.386	.397
1,200	.364	.375	.386
1,300	.356	.367	.377
1,400	.349	.359	.370
1,500	.342	.352	.362
1,600	.337	.347	.357
1,700	.333	.343	.353
1,800	.328	.338	.348
1,900	.323	.333	.342
2,000	.320	.330	.339
2,200	.312	.322	.331
2,400	.306	.316	.324
2,600	.300	.309	.319
2,800	.296	.305	.314
3,000	.293	.302	.311

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
FLAT TO
CHARGES BASE PRICEIf second floor is divided into more than one apart-
ment, allow for each additional apartment..... \$900.00

CONSTRUCTION: Steel joists, add to base price..... .001

ROOF: Sheet metal, tin, add to base price..... .008

INTERIOR FINISH: Mahogany or walnut trim and doors
in apartment, add to base price..... .010

STORES AND APARTMENTS (CHEAP) THREE STORY



A type of building usually found in the cheap or industrial neighborhoods or in rural districts. Cheap material and workmanship throughout.

Specifications

EXCAVATION: Sufficient for footings only.

FOUNDATION: Full footing foundation of 10-in. concrete block or poured concrete.

WALLS:

Base 1: Stucco on wood lath on 2-in.x4-in. studding. Wood frame double strength glass store front—no return. Remainder of windows double hung yellow pine sash.

Base 2: Common brick construction all sides, cast stone sills and lintels; balance same construction as stucco.

Base 3: Cheap face brick front; balance same construction as common brick.

Base 4: Cheap face brick front, and one side; balance same construction as common brick.

FLOORS: 1-in. tongue and groove yellow pine or fir on 2-in.x10-in. joists, 16-in. on center.

ROOF: Flat composition on 1-in. sheathing and 2-in.x6-in. rafters.

INTERIOR CONSTRUCTION: Ordinary wood joists supported by cast iron columns and steel beams or brick partition walls; wood lath and three coat plaster on 2-in.x4-in. studding. Store painted and apartments papered cheap grade. Cheap yellow pine doors and trim.

SERVICE IMPROVEMENTS: Stove heating. Drop cord electric lighting with knob and tube wiring. Plumbing, Grade D, with one set of cheap enamel fixtures in the apartments and 1 sink and 1 toilet in the store. Scarcity of cupboard space. No built-in fixtures. Stairways of wood construction.

(STORES AND APARTMENTS (CHEAP)—THREE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 STUCCO	Base 2 COMMON BRICK	Base 3 FACE BRICK FRONT	Base 4 FACE BRICK FRONT AND 1 SIDE
800	\$.216	\$.252	\$.255	\$.262
900	.207	.242	.244	.251
1,000	.199	.232	.235	.241
1,100	.193	.225	.228	.234
1,200	.187	.218	.221	.226
1,300	.183	.214	.216	.221
1,400	.179	.209	.211	.216
1,500	.176	.205	.208	.213
1,600	.173	.202	.204	.209
1,700	.171	.199	.202	.207
1,800	.169	.197	.200	.204
1,900	.167	.195	.197	.202
2,000	.165	.193	.195	.200

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
For more than two apartments, add per additional apartment	\$365.00	
1/2-in. No. 2 grade oak floors in living room, add to base price.....		.003
Tile floors in bathroom, add.....	75.00	
Sheet metal, tin, roof, add to base price.....		.004

STORES AND APARTMENTS (AVERAGE) THREE STORY



A type of building generally found in the suburban commercial centers of the larger cities. Quality of workmanship and materials average. No architectural supervision but meets good building code requirements.

Specifications

BASEMENT: Full concrete basement with storage and laundry rooms.

WALLS:

Base 1: Cement stucco on construction tile; plastered interior. Wood and metal frame store front with double strength glass.

Base 2: Common brick; balance, same construction as stucco.

Base 3: Face brick front, common brick side and rear. Small amount of terra cotta trim at entrances; balance, same construction as stucco.

Base 4: Same as above except front wall and one side of face brick.

Base 5: 4-in. face brick backed up with 4-in. common brick; balance of construction, same as given above.

FLOORS: Basement, cement floor. $\frac{5}{8}$ -in. oak floor on 1-in. sub-floor in store and apartments.

ROOF: Flat composition with mansard effect.

INTERIOR CONSTRUCTION: 2-in.x10-in. wood joists, 16-in. on center, supported by cast iron columns and steel beams. Wood lath and plaster on 2-in.x4-in. stud partitions. Good grade yellow pine doors and trim. Entrance hall and stairway enclosed by brick or tile walls; wooden stairways.

SERVICE IMPROVEMENTS: Single pipe, low pressure steam heating system; electric lighting, conduit wiring and fair grade of fixtures. Plumbing, Grade C. One set of vitreous china and enameled fixtures in apartments; 1 toilet, 1 sink, and 1 lavatory in store. Small amount of built-in cabinet work in apartment.

(STORES AND APARTMENTS (AVERAGE)—THREE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft. AREA	Base 1 STUCCO	Base 2 COMMON BRICK	Base 3 FACE BRICK FRONT	Base 4 FACE BRICK FRONT AND 1 SIDE	Base 5 FACE BRICK
1,000	\$.264	\$.284	\$.287	\$.292	\$.297
1,100	.255	.274	.277	.282	.287
1,200	.248	.267	.270	.274	.279
1,300	.242	.260	.263	.267	.272
1,400	.237	.254	.257	.260	.265
1,500	.233	.249	.252	.255	.260
1,600	.229	.245	.248	.251	.256
1,700	.226	.242	.245	.248	.253
1,800	.223	.239	.242	.244	.249
1,900	.221	.236	.239	.241	.246
2,000	.219	.233	.236	.239	.244
2,200	.215	.229	.232	.235	.239
2,400	.212	.226	.229	.232	.235
2,600	.209	.223	.226	.229	.231
2,800	.206	.220	.223	.226	.228
3,000	.203	.217	.220	.223	.225

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

CENT CHARGES
TO
FLAT
CHARGES BASE PRICEFor more than two apartments, add per additional
apartment \$525.00

FLOORS: Steel joists in floor construction, add to base price.. .001

INTERIOR FINISH: Metal lath base for plaster, add to base .006

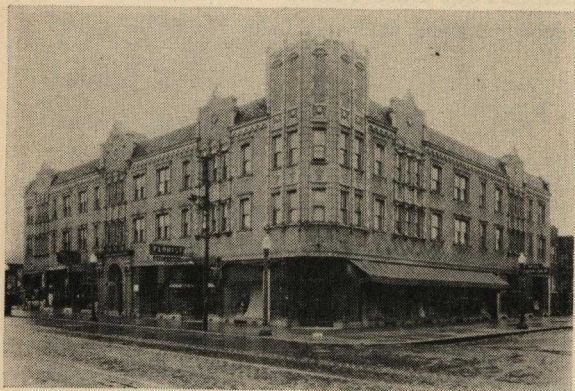
Gum or oak trim in apartment, add to base..... .009

Steel stairway construction, add to base..... .001

Tile walls in bathroom, add per bathroom..... 100.00

ROOF: Sheet metal, tin, add to base price..... .006

STORES AND APARTMENTS (GOOD) THREE STORY



A type of building found in the better grade suburban commercial centers. Quality of workmanship and material above the average. Built under architectural supervision.

Specifications

BASEMENT: Full concrete basement with segregated storage and laundry rooms.

WALLS:

Base 1: Face brick front with good grade of common brick side and rear; cast stone or terra cotta trim and cornice around main entrance. Metal frame with plate glass store front and 3 to 4 foot returns at entrance.

Base 2: Same as above except front and one side wall of face brick and trimmed as specified.

Base 3: 4-in. face brick backed up with common brick or construction tile.

FLOORS: Basement, cement floor. Hardwood or composition on reinforced concrete in store. Hardwood in apartment. Main entrance, bathroom, and washroom floors tiled.

ROOF: Flat gravel covered composition on 1-in. sheathing and wood rafters; blind air space over top floor.

INTERIOR CONSTRUCTION: 2-in.x12-in. joists, 16-in. on center, supported by steel frame and brick partition walls. Metal lath plaster on wood stud partitions. Oak or gum doors and trim throughout. Sound proofing used between apartments and store and between hallways and apartments. Main entrance stairway, service stairway, and hallways of fireproof construction. Stairs either concrete or steel.

SERVICE IMPROVEMENTS: Low pressure steam heating, modern type radiators. Electric lighting with conduit wiring and good grade of fixtures. One set of vitreous china enameled iron plumbing fixtures in the apartment. Two washrooms in store with one toilet, one lavatory, and one sink in each. Electrical refrigeration and built-in. kitchen cabinet in the apartments. Plenty of closet space.

(STORES AND APARTMENTS (GOOD)—THREE STORY, Cont'd)

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

SQ. FT. AREA	Base 1 FACE BRICK FRONT	Base 2 FACE BRICK FRONT AND 1 SIDE	Base 3 FACE BRICK
1,000	\$.410	\$.423	\$.435
1,100	.396	.408	.420
1,200	.385	.396	.408
1,300	.376	.387	.399
1,400	.369	.380	.391
1,500	.363	.374	.385
1,600	.357	.368	.378
1,700	.352	.362	.373
1,800	.348	.358	.369
1,900	.344	.354	.365
2,000	.340	.350	.361
2,200	.332	.342	.352
2,400	.324	.334	.344
2,600	.318	.328	.337
2,800	.313	.322	.332
3,000	.309	.318	.328

For areas in excess of those shown above, see Page 37

Corrective Factors for Structural Deviations

NOTE: Correct base prices by charges given below:

	FLAT CHARGES	CENT CHARGES TO BASE PRICE
For more than two apartments, add for each additional apartment	\$950.00	
CONSTRUCTION: Steel joists, add to base price.....		.001
ROOF: Sheet metal, tin, add to base price.....		.006
INTERIOR FINISH: Mahogany or walnut trim and doors in apartments, add to base price.....		.009

DEPARTMENT STORES—NON-FIREPROOF (ORDINARY TYPE)



Specifications

FOUNDATION: Concrete with full finished basement suitable for store space.

WALLS: Brick bearing type; cast stone lintels and sills; wood sash; plain store fronts.

INTERIOR CONSTRUCTION: Wood flooring on 2-in.x12-in. joists, 12-

in. on center, supported by timber beams and wood or cast iron columns; plainly decorated.

ROOF: Flat built up composition.

SERVICE IMPROVEMENTS: Steam heat; ordinary electric wiring and fixtures; average type plumbing; open elevators; enclosed iron stairways.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Two Story Building

Sq. Ft. GROUND AREA	PERIMETER OF WALL									
	200'	300'	400'	500'	600'	700'	800'	900'	1,000'	1,100'
30,000					.223	.229	.235	.241	.247	.253
28,000					.225	.232	.239	.246	.253	.260
26,000					.227	.235	.242	.249	.256	.263
24,000				.226	.233	.240	.247	.254	.261	.268
22,000				.229	.237	.245	.253	.261	.269	.277
20,000			.221	.231	.241	.250	.260	.270		
18,000			.229	.238	.248	.258	.268			
16,000			.233	.244	.256	.267				
14,000		.226	.239	.253	.266					
12,000		.230	.246	.263	.280					
10,000	.223	.241	.260	.279						
8,000	.231	.256	.280	.305						
7,000	.236	.266	.296							
6,000	.245	.282	.320							

For areas in excess of those shown above, see Page 37

NOTE: Buildings over two stories, add $1\frac{1}{2}\%$ increase to the above prices for each additional story. Buildings one story only in height, deduct $1\frac{1}{2}\%$. No special equipment such as elevators and stairways, deduct 10% .

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

DEPARTMENT STORES—NON-FIREPROOF (GOOD TYPE)



Specifications

FOUNDATION: Concrete with full finished basement suitable for store space.

WALLS: Brick with stone trim; wood sash windows. Modern deep set store fronts and show windows.

INTERIOR CONSTRUCTION: Hardwood floors laid on sub-floor and

2-in.x12-in. joists, 12-in. on center, supported by wooden or steel beams and cast iron columns. Plastered interior well decorated. Equipped for restaurant service.

ROOF: Flat built up composition.

SERVICE IMPROVEMENTS: Steam heat; good grade of electric fixtures and wiring. Restrooms with good grade of plumbing. Modern elevators.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Two Story Building

Sq. Ft. GROUND AREA	PERIMETER OF WALL									
	200'	300'	400'	500'	600'	700'	800'	900'	1,000'	1,100'
30,000					.274	.282	.287	.296	.304	.311
28,000					.276	.285	.294	.302	.310	.318
26,000					.280	.289	.298	.308	.316	.326
24,000				.278	.287	.296	.305	.314	.324	.333
22,000				.282	.292	.302	.312	.322	.332	.342
20,000			.272	.284	.296	.308	.320	.332		
18,000			.282	.294	.305	.317	.329			
16,000			.287	.301	.314	.328				
14,000		.278	.295	.311	.327					
12,000		.284	.304	.324	.344					
10,000	.274	.297	.320	.343						
8,000	.284	.314	.344	.375						
7,000	.291	.327	.364							
6,000	.302	.346	.393							

For areas in excess of those shown above, see Page 37

NOTE: Buildings over two stories, add $1\frac{1}{2}\%$ to the above prices for each additional story.

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

DEPARTMENT STORES—FIREPROOF (ORDINARY TYPE)



Specifications

FOUNDATION: Concrete with full finished basement suitable for store space or restaurant purposes.

WALLS: Brick curtain walls supported by reinforced concrete or steel frame panel. Plain exterior trim. Plain store fronts.

INTERIOR CONSTRUCTION: Reinforced concrete or steel frame construction. Plastered interior, plainly decorated. Reinforced concrete floors finished with composition or hard wood.

ROOF: Flat built up composition on concrete slab.

SERVICE IMPROVEMENTS: Steam heat. Average grade electric wiring and fixtures. Restrooms with average grade of plumbing and fixtures. Old style passenger and freight elevators. Sprinkler system.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Two Story Building

PERIMETER OF WALL

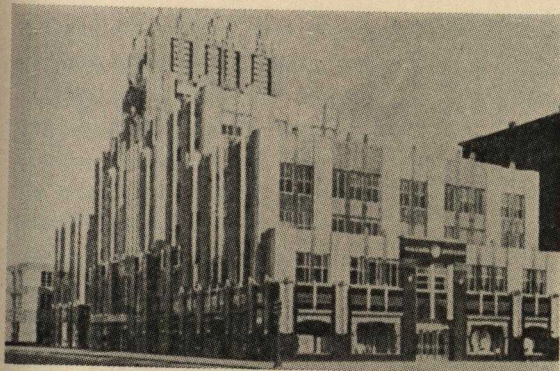
Sq. Ft. GROUND AREA	200'	300'	400'	500'	600'	700'	800'	900'	1,000'	1,100'
30,000					.300	.308	.316	.324	.332	.340
28,000					.303	.312	.321	.330	.339	.348
26,000					.306	.316	.326	.336	.346	.356
24,000				.304	.314	.324	.334	.344	.354	.364
22,000				.308	.319	.330	.341	.352	.363	.374
20,000			.298	.311	.324	.337	.350	.363		
18,000			.308	.321	.334	.347	.360			
16,000			.314	.329	.344	.359				
14,000		.304	.322	.340	.358					
12,000		.310	.332	.354	.376					
10,000	.300	.325	.350	.375						
8,000	.311	.344	.377	.410						
7,000	.318	.358	.398							
6,000	.330	.380	.430							

For areas in excess of those shown above, see Page 37

NOTE: Buildings of more than two stories in height, add $1\frac{1}{2}\%$ to the above prices for each additional story.

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

DEPARTMENT STORES—FIREPROOF (GOOD TYPE)



Specifications

FOUNDATION: Concrete with full finished basement suitable for store space and restaurant purposes.

WALLS: Brick curtain walls supported by reinforced concrete or steel frame panel. Trimmed with stone or terra cotta. Lower walls of granite or

Bedford stone. Recessed store fronts and show windows.

INTERIOR CONSTRUCTION: Reinforced concrete or steel frame construction. Plastered interior, well decorated. Reinforced concrete floors with composition or hard wood finish.

ROOF: Flat built up composition on concrete slab.

SERVICE IMPROVEMENTS: Steam heat. Good grade electric wiring and fixtures. Moderate size restrooms with good grade of plumbing and fixtures. Modern elevators. Automatic sprinkler system. Ventilating system.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Two Story Building

Sq. Ft. GROUND AREA	PERIMETER OF WALL									
	200'	300'	400'	500'	600'	700'	800'	900'	1,000'	1,100'
30,000					.386	.396	.406	.416	.426	.436
28,000					.390	.401	.413	.425	.436	.447
26,000					.394	.406	.419	.432	.445	.458
24,000				.391	.404	.417	.430	.443	.456	.469
22,000				.396	.410	.424	.438	.452	.466	.480
20,000			.383	.400	.417	.434	.450	.467	.484	.501
18,000			.396	.413	.430	.447	.464	.481	.498	.515
16,000			.404	.423	.443	.462				
14,000		.391	.414	.437	.460					
12,000		.398	.427	.455	.483					
10,000	.388	.418	.450	.482						
8,000	.400	.443	.485	.527						
7,000	.409	.460	.512							
6,000	.437	.489	.553							

For areas in excess of those shown above, see Page 37

NOTE: for buildings of more than two stories in height, add $1\frac{1}{2}\%$ to above prices for each additional story.

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

DEPARTMENT STORES—FIREPROOF (EXPENSIVE TYPE)



Specifications

FOUNDATION: Concrete with full finished basement suitable for store and restaurant purposes.

WALLS: Brick curtain walls supported by reinforced concrete or steel frame panels. Walls exposed to street view of granite or terra cotta. Modern architecturally correct exterior trim. Expensive store fronts and show windows.

INTERIOR CONSTRUCTION: Reinforced concrete or steel frame construction. Plastered interior, well decorated. Reinforced concrete floors. First floor finished with terrazzo or tile and remainder of composition tile.

ROOF: Equipped with glass inclosed roof garden for restaurant and show purposes.

SERVICE IMPROVEMENTS: Steam heat. Best grade of electric fixtures. Large restrooms with good grade plumbing and fixtures. Micro controlled modern elevators. Escalators between floors. Automatic sprinkler system. Modern ventilating and air washing system.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Sq. Ft.		Two Story Building									
GROUND AREA		PERIMETER OF WALL									
		200'	300'	400'	500'	600'	700'	800'	900'	1,000'	1,100'
30,000						.514	.528	.542	.556	.570	.584
28,000						.520	.535	.550	.565	.580	.595
26,000						.525	.542	.559	.576	.593	.610
24,000					.521	.539	.556	.573	.590	.607	.624
22,000					.528	.546	.565	.585	.604	.623	.642
20,000				.511	.534	.556	.578	.600	.622		
18,000				.528	.550	.572	.594	.616			
16,000				.539	.564	.590	.615				
14,000			.521	.552	.583	.614					
12,000			.531	.569	.607	.645					
10,000	.514	.557	.600	.643							
8,000	.533	.590	.647	.704							
7,000	.545	.614	.683								
6,000	.566	.651	.737								

For areas in excess of those shown above, see Page 37

NOTE: For buildings of more than two stories in height, add $1\frac{1}{2}\%$ to the above prices for each additional story.

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

HOTELS

Comparatively recent developments such as the high speed elevator, the automobile, the radio, and the airplane have had a marked effect on the construction of hotels. The modern hotel is now a multistory structure elaborately equipped with modern conveniences. It is not necessarily located in the congested areas of the cities but rather in the more open spaces along the boulevards, plazas, etc. The old style hotel still remains in use for commercial and transient trade. The individualism of the construction of both types of hotels precludes the possibility of a general standard breakdown analysis of the construction costs, consequently the following types are given:

Hotels—Type 1



The modern hotel located in outlying districts. A fire-proof steel frame structure of individual design; walls of brick with stone trim. Large lobby, ballrooms, dining rooms, beautifully decorated with the best quality of fixtures. Large rooms with baths, well decorated and best grade of fixtures. Highest quality of plumbing, heating, and mechanical equipment. High speed micro controlled elevators. Best type of construction and grade of material throughout.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.85)

Hotels—Type 2



The modern multistory hotel located in the congested metropolitan area. A fireproof steel frame structure of the plain exterior court type. Walls of brick and stone. Large lobby, ballrooms, dining rooms beautifully and artistically decorated with best quality of fixtures. Large rooms with tile baths. Shops and stores on ground floor. Highest quality of plumbing, heating, and me-

chanical equipment. High speed modern elevators. Best type of construction and grade of materials used throughout.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.75)

Hotels—Type 3



The modern multistory hotel located in the congested metropolitan area. A fireproof steel constructed building of the interior court type. Same general construction as type two with the exception of medium sized rooms.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.70)

Hotels—Type 4



Modern hotel of fireproof steel frame construction with walls of brick and stone. Fair size lobby, ball-rooms, dining rooms well decorated. Large rooms with tile baths. Standard grade of plumbing, heating, and lighting fixtures. Modern elevators. Good substantial construction throughout.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.60)

Hotels—Type 5



The commercial type of hotel of fireproof steel frame construction with walls of brick and stone. Stores and lobby on first floor. Large rooms with baths. Standard grade of plumbing, heating, and electrical equipment. Modern elevators. Plain decorations throughout.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.55)

Hotels—Type 6



The commercial type of the same general type of construction as given for Type 5 with average grade of materials and fixtures and small rooms.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.50)

Hotels—Type 7



The residential type of hotel of steel frame fireproof construction with walls of brick and stone. Small lobby and rooms plainly decorated. Baths with tile floor and plastered walls. Average grade of plumbing, heating, and electric fixtures. Old style elevators. Average grade of materials and type of construction throughout.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.45)

Hotels—Type 8



The transient type of hotel of semi-fireproof construction. Walls of brick and stone. Small lobby and rooms. Running water in rooms. Average grade of plumbing, heating, and electrical fixtures. Old style elevators.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.40)

Hotels—Type 9



The transient type of hotel of non-fireproof construction with walls of brick. Small rooms with running water in rooms. Steam heat. No elevator.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.30)

HOSPITALS

Hospitals—Type 1

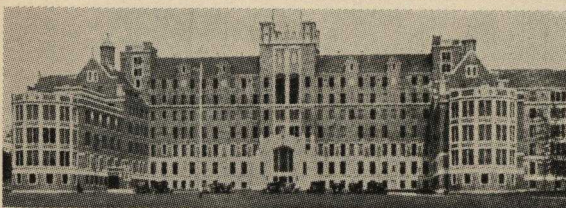


A modern fireproof structure of the latest design. Steel frame and concrete construction with walls of face brick trimmed with stone or terra cotta. Full finished basement. Reinforced concrete floors covered with tile or terrazzo in lobbies, main corridors, and operating rooms. Composition or linoleum covered floors in rooms, wards, and remaining corridors. Metal doors and trim throughout. Good sound proofing throughout with hard finished and painted parti-

tion walls. High grade up-to-date mechanical, electrical, and elevator equipment. High grade plumbing and fixtures. Vapor heating. Air conditioning. Ideal arrangement with efficient operating rooms, segregated sections, and preponderance of private rooms. Best material and high class construction throughout.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.75)

Hospitals—Type 2

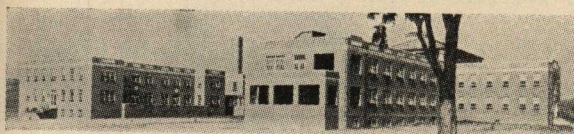


A modern fireproof structure of steel frame and concrete construction. Walls of face brick with limited amount of stone trim. Full finished basement. Reinforced concrete floors with composition or linoleum covering throughout. Metal doors and trim. Soundproofing. Good grade me-

chanical, electrical, and elevator equipment. Good grade plumbing and fixtures. Vapor heating. Partial air conditioning. Good arrangement with about 50 per cent private rooms. Good material and workmanship throughout.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.70)

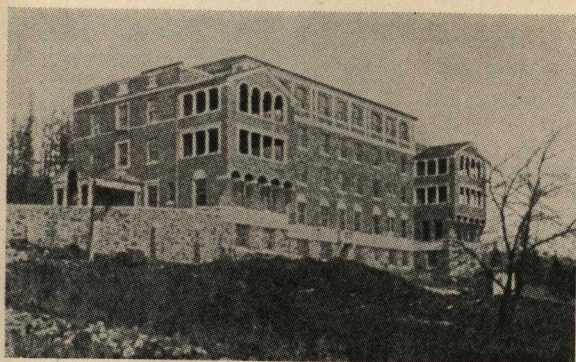
Hospitals—Type 3



A modern fireproof structure of reinforced concrete with walls of face brick and very plain exterior trim. Full unfinished basement. Reinforced concrete floor with linoleum or composition finish. Hardwood doors and trim. No sound-proofing. Average grade mechanical, electrical, and elevator equipment. Average grade plumbing and fixtures. Steam heating. No ventilating system. About 50 per cent wards. Average grade material and workmanship throughout.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.60)

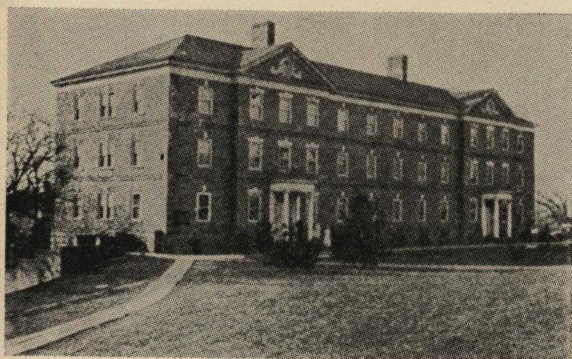
Hospitals—Type 4



An old type semi-fireproof structure of cast iron column and steel beam construction. Walls of face brick with plain exterior stone trim. Hardwood floors, doors, and interior trim. No sound-proofing. Average grade of mechanical, electrical, and elevator equipment. Average grade of plumbing and fixtures. Steam heating. About 50 percent wards.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.45)

Hospitals—Type 5



An old type non-fire-resisting structure of brick bearing wall construction. Floors of wood joist construction covered with hardwood. Hardwood doors and trim. No sound-proofing. Average grade of mechanical, electrical, and elevator equipment. Average grade of plumbing and fixtures. A preponderance of wards.

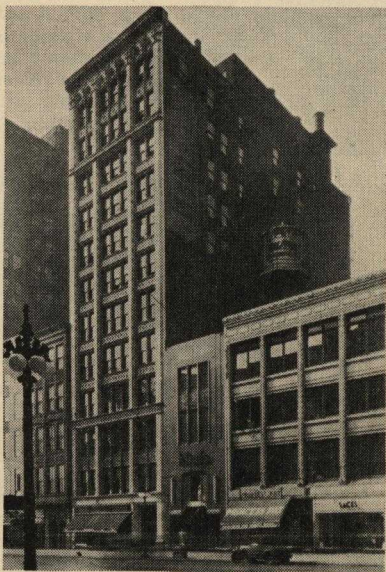
(Price per cubic foot of volume, at Boeckh Index No. 100—\$.40)

OFFICE BUILDINGS—MODERN

In the determination of the base for an office building its height as well as the materials and workmanship used in its construction must be taken into consideration. That is to say a 15 story building and a 25 story building of the same general construction will not have the same base (price per cubic foot of volume), because as the height of a building increases the various component construction factors do not vary in the same direct ratio. For instance, with an increase in height of a building, some factors such as structural steel and mechanical equipment vary in an increasing ratio, others such as roofing and foundations in a decreasing ratio, and still others such as interior and exterior finish remain in a practically constant ratio.

In the following table are given the base prices for buildings ranging from the eight story rectangular type to the 50 story pyramided type for the following classes of construction:

Office Building—Type 1



An average constructed fireproofed building with the lower walls of brick and stone plinth and the upper walls of pressed brick. The office floors of reinforced concrete with composition finish; lobby and main floor of marble and corridor floors of terrazzo. Plain exterior trim and metal trim and doors and steel sash windows throughout. High speed elevators. Good grade of plumbing and heating.

(See table, page 151)

Office Building—Type 2



A good fireproof constructed building with lower walls of granite and upper walls of pressed brick. The office floors of reinforced concrete with composition finish; lobby and main floor of marble and remaining corridor floors of art marble. Architectural terracotta exterior trim. Mahogany trim and doors and steel sash windows. High speed micro-controlled elevators. Best grade of plumbing and heating.

(See table, page 151)

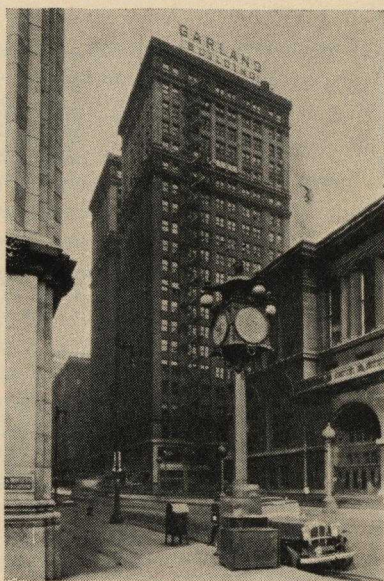
Office Building—Type 3



An average fireproof constructed building with terracotta front and side walls. The office floors of reinforced concrete composition finish; lobby floor of tile and corridors of terrazzo. Plain exterior trim. Metal doors and trim with steel sash windows throughout. High speed elevators and good grade of plumbing and heating.

(See table, page 151)

Office Building—Type 4



An average fireproof constructed building with walls of Bedford stone face. Office floors of reinforced concrete with composition finish; lobby floor of marble and corridors of terrazzo. Plain exterior trim. Walnut trim and doors; steel sash windows throughout. High speed elevators and good grade of plumbing and heating.

(See table, page 151)

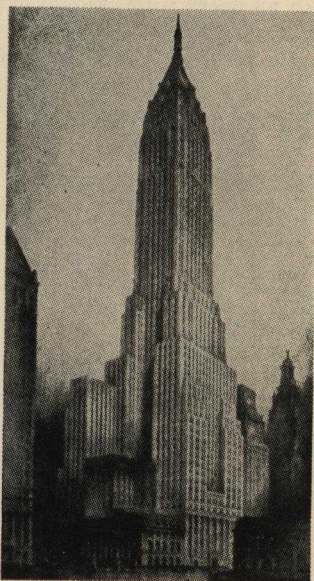
Office Building—Type 5



A good fireproof constructed building with walls of terra cotta, ornamental design throughout. Office floors of reinforced concrete with rubber tile finish, first floor and corridors of marble. Marble wainscoting in corridors. Mahogany doors and trim, and steel sash windows throughout. Automatic self leveling high speed elevators. Best grade of plumbing and heating.

(See table, page 151)

Office Building—Type 6



A good fireproof constructed building with walls of Bedford stone and granite, ornamental design and tracery. Office floors of reinforced concrete with rubber tile finish first floor, travertine, and corridors of marble. Mahogany doors and trim, and steel sash windows. Marble wainscoting in corridors. Automatic self leveling high speed elevators. Best grade of plumbing and heating.

Cubic Foot Base Prices

MODERN OFFICE BUILDINGS

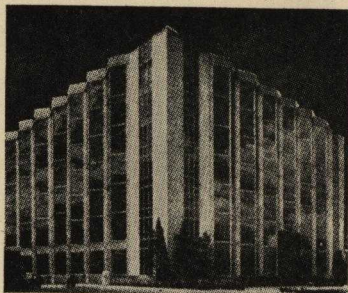
(Price per cubic foot of volume, at Boeckh Index No. 100)

BUILDING No.	8 STORIES	10 STORIES	12 STORIES	15 STORIES	20 STORIES	25 STORIES	30 STORIES	35 STORIES	40 STORIES	45 STORIES	50 STORIES
1	.546	.549	.552	.557	.567	.588	.612	.633	.650	.661	.668
2	.563	.566	.570	.575	.585	.602	.629	.650	.668	.679	.686
3	.632	.638	.641	.644	.654	.674	.698	.723	.739	.750	.756
4	.711	.715	.718	.722	.731	.750	.775	.800	.815	.825	.835
5	.725	.728	.732	.737	.745	.765	.790	.815	.830	.840	.850
6	.835	.839	.843	.847	.855	.875	.900	.925	.940	.950	.960

For areas in excess of those shown above, see Page 37

REINFORCED CONCRETE OFFICE BUILDINGS

A fireproof constructed building in which all floors, roofs, and columns are monolithic concrete reinforced with steel. Brick, stone, or terra cotta exterior walls. Office floors finished with composition; lobby, main floor, and corridors terrazzo. Marble wainscoting in corridors. Steel sash windows throughout. Hardwood trim and doors. High speed automatic elevators. Ample and good grade of plumbing. Steam heating.



Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

6 STORIES	8 STORIES	10 STORIES	12 STORIES	15 STORIES	20 STORIES
\$.46	\$.48	\$.50	\$.51	\$.53	\$.58

For areas in excess of those shown above, see Page 37

MUNICIPAL BUILDINGS

As this type of building follows more or less the design of the Office Building classification, if not in looks at least in specification, the appraiser should select rates from one of the several office building classifications given herewith.

On such properties as Fire Houses and Police Stations, apply the method shown under Miscellaneous Buildings, page 173.

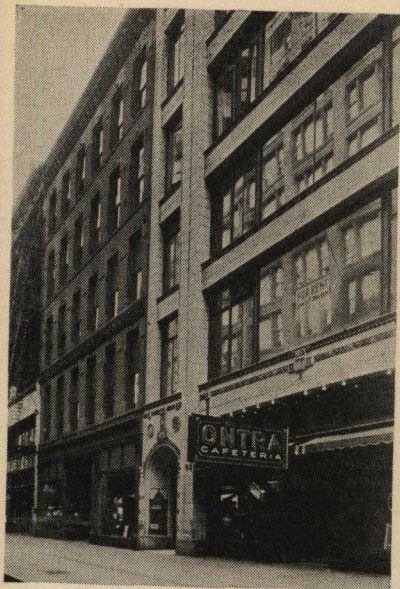
OLD STYLE OFFICE BUILDINGS (Semi-Fireproof)

A semi-fireproof constructed building of moderate height and rectangular shape; loads being carried by cast iron columns. Walls of brick and stone. Plain exterior finish. Plain plastered interior with wood sash windows and doors. Hardwood floors and trim. Open iron stairways. Old type electric or hydraulic elevators. Average grade of plumbing and fixtures. Steam heating. Flat built-up composition roof. Stores on lower floor.

Cubic Foot Base Prices

(Price per cubic foot of volume,
at Boeckh Index No. 100)

6 STORIES	8 STORIES	10 STORIES	12 STORIES	14 STORIES	16 STORIES
\$.35	\$.37	\$.39	\$.40	\$.41	\$.42



OLD STYLE OFFICE BUILDINGS

(Non-Fireproof)

A non-fire-resisting constructed building of low heights and rectangular shape with loads being carried by brick bearing walls, and wood joists. Walls of brick and stone. Plain exterior finish. Plain plastered interior finish with wood sash windows and doors. Permanent partitions of wood studing with plastered finish. Wood floors and trim. Open stairways. Old type elevators. Average grade of plumbing and fixtures. Flat built-up composition roof. Stores on lower floor.



Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

3 STORIES	4 STORIES	5 STORIES	6 STORIES	7 STORIES	8 STORIES
\$.27	\$.29	\$.31	\$.32	\$.33	\$.34

THEATER BUILDINGS

The variations which exist between the old time theater with its plain small auditorium and unimproved mechanical equipment and the modern theater with its scientific air cooling and ventilating systems, and its expensive and attractive exterior and interior decorations, are so great as to preclude the possibility of making a break down analysis and still remain within the scope of this book.

The following typical theater buildings adequately cover the field for most practical purposes.

Theaters—Type 1



The small suburban theater having a seating capacity of 500 to 750. Basement sufficient for heating plant only. Front wall of pressed brick, remainder common brick and tile. Small lobby with floor of tile on concrete slab. Sloping auditorium floor of concrete on earth bed. Flat roof of built up composition. Unupholstered seats. Plain interior trim throughout. Very small rest rooms with ordinary fixtures. Fair mechanical equipment. Low pressure steam heat. No balcony.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.25)

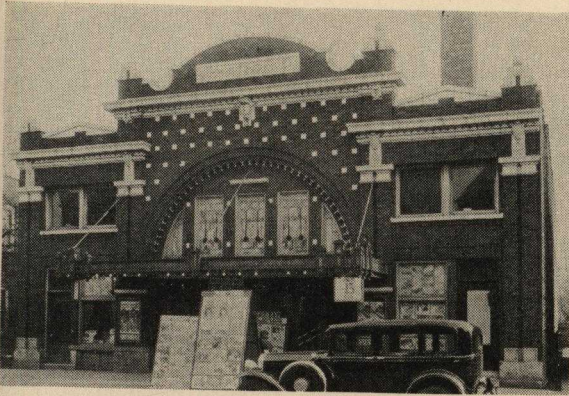
Theaters—Type 2



The suburban or small metropolitan theater having a seating capacity from 750 to 1,500. Basement for heating plant and storage space for stores. Front and one side wall of pressed brick; remainder common brick and tile. Copper frame store fronts. Small lobby with 2-in. slate floor on concrete floor. Sloping auditorium floor of concrete on earth bed. Flat roof of composition with mansard effect of Spanish tile in front. Metal doors and trim throughout. Upholstered seats. Fair sized rest rooms with a good grade of fixtures. Good mechanical equipment. Vapor heating. No balcony.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.35)

Theaters—Type 3



The suburban theater having a seating capacity of 750 to 1,500. Basement under one-half of the building to house ventilating equipment, heating plant, air cooling equipment, and to furnish storage space for stores. One side and front wall of pressed brick with elaborate stone and terra cotta trim, remainder common brick and tile, copper store fronts. Medium size lobby with floor of marble and ornamental finish. Sloping auditorium concrete floor on earth bed. Flat

composition roof with mansard effect in front. Upholstered seats. Fair sized tiled rest rooms with good fixtures. Panelled oak doors and trim in lobby; remainder metal. Good mechanical equipment. Air cooling, and washing system. Vapor heating. High grade lighting fixtures. No balcony.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.40)

Theaters—Type 4



The average size metropolitan theater having a seating capacity of 1,000 to 2,000. Structural steel frame with front wall of pressed brick and remainder of common brick and tile. Basement sufficient for heating and ventilating system. Plain stone trim. Good small lobby with tile floor and moderately decorated. Sloping auditorium floor of concrete on earth bed; remainder concrete on pressed metal joists. Flat composition roof. Metal doors and trim throughout. Uphol-

stered seats. Fair sized rest rooms with average grade of fixtures. Good mechanical equipment. Air cooling and washing system. Vapor heating. Small balcony.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.45)

Theaters—Type 5



The average size metropolitan theater having a seating capacity of 1,000 to 2,000. Structural steel frame with front wall of stone and terra cotta; balance common brick and tile. Copper store fronts. Basement large enough to furnish storage space and to house the heating and ventilating systems. Good small lobby with marble floor and elaborate decoration. Sloping auditorium floor of concrete on earth bed; balance concrete on pressed metal joists. Flat

composition roof. Panelled oak doors and trim in lobby; balance metal. Good sized rest rooms with good grade of fixtures. Good mechanical equipment. Air cooling and washing system. Vapor heating. Small balcony.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.50)

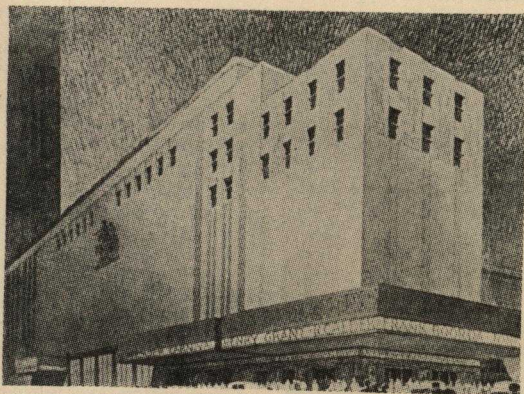
Theaters—Type 6



The metropolitan theater having a seating capacity of 3,000 to 4,000. The same general construction as given above for Type 5 with the exception of having a large balcony and small stage.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.55)

Theaters—Type 7



The modern metropolitan theater with a seating capacity of 4,000 to 6,000. Structural steel frame with front wall of stone or terra cotta. Full basement with large lounging rooms in the front. Basement floor of concrete with composition tile effect finish. Large elaborately decorated lobbies with marble floors and stairways. Sloping auditorium floor of concrete on pressed metal joists with composition finish. Cast plastered finish in auditorium elaborately decorated.

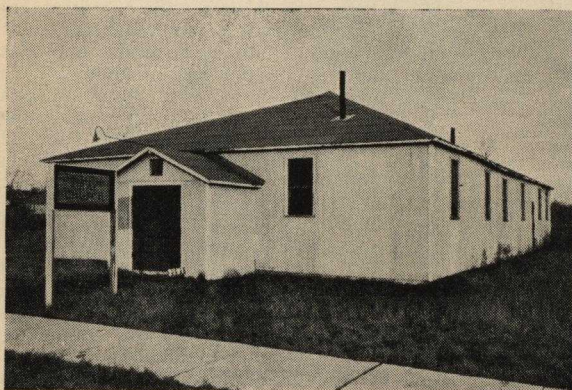
Large stage and disappearing orchestra pit. Large well decorated rest rooms with good grade of fixtures. Best grade of mechanical equipment. Air cooling and washing system. Vapor heating. Large balcony.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.65)

CHURCHES

Churches—Type 1

FRAME—PLAIN EXTERIOR



FOUNDATION: Brick piers or equal.

WALLS: 1-in. drop siding on sheathing, paper insulation and 2-in.x4-in. studding, 16-in. on center. Wood lath and plastered interior. Double hung yellow pine sash with plain glass windows.

FLOORS: Yellow pine floors on 2-in.x10-in. joists, 16-in. on center.

ROOF: $\frac{1}{2}$ pitch 2-in.x6-in. rafters, 16-in. on center. Composition or wood shingle. Tin flashing and gutters.

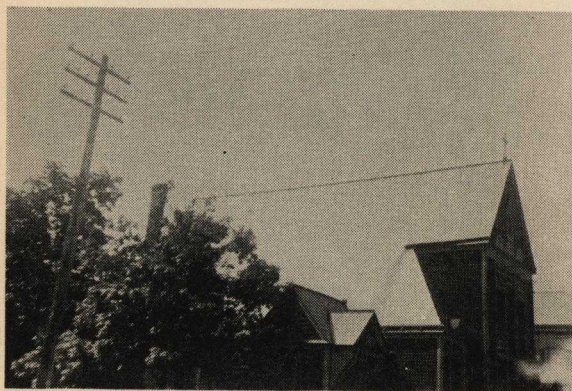
INTERIOR CONSTRUCTION: One auditorium with plastered walls painted ordinary grade. Pine seats. Yellow pine doors, trim, and altar. No organ or vestibule.

SERVICE IMPROVEMENTS: Stove heat. Cheap plumbing fixtures. Electric lighting with knob and tube wiring and cheap fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.22)

Churches—Type 2

FRAME—GOOD EXTERIOR TRIM



FOUNDATION: Concrete or cement block finish; basement suitable for auxiliary church purposes.

WALLS: 1-in. drop siding on sheathing, paper insulation and 2-in.x4-in. studding, 16-in. on center. Double hung arched wood sash with stained glass windows.

FLOORS: Main floor, hardwood on 1-in. sub-floor and paper insulation. 2-in.x12-in. joists, 16-in. on center, supported by cast iron columns.

Basement, cement floor.

ROOF: $\frac{1}{2}$ pitch, 2-in.x6-in. rafters, 16-in. on center. Sheet metal or light slate shingle. Tin flashing and gutters.

INTERIOR CONSTRUCTION: Small sized vestibule with one large auditorium on main floor. Basement divided by partitions for auxiliary church purposes. Plastered interior painted ordinary grade. Oak seats. Yellow pine and oak doors, trim, and altar. Small organ.

SERVICE IMPROVEMENTS: Hot air heating. Wash rooms with average grade of plumbing and fixtures. Electric lighting with ordinary fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.28)

Churches—Type 3

BRICK—PLAIN EXTERIOR



FOUNDATION: Concrete or cement block. Finished basement suitable for auxiliary church purposes.

WALLS: 8-in. common brick on unexposed sides and face brick on exposed sides, with plastered interior. Double hung arch wood sash with stain glass windows.

FLOORS: Main floor, hardwood on 1-in. sub-floor and paper insulation and 2-in.x12-in. joists, 16-in. on center, supported by cast iron columns. Dressed and matched yel-

low pine flooring laid over concrete base in basement.

ROOF: $\frac{1}{2}$ pitched 2-in.x6-in. rafters, 16-in. on center. Sheet metal or light slate shingle. Tin flashing and gutters.

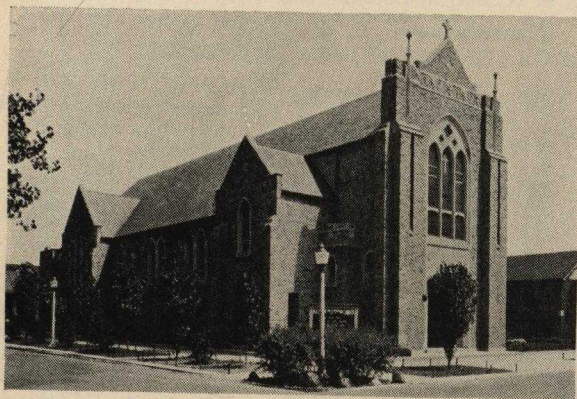
INTERIOR CONSTRUCTION: Small sized vestibule with one auditorium on main floor. Basement divided for auxiliary church purposes. Plastered interior, painted ordinary grade. Oak seats. Yellow pine and oak doors, trim, and altar. Small organ.

SERVICE IMPROVEMENTS: Hot air heating. Wash rooms with average grade of fixtures. Electric lighting with ordinary grade of fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.35)

Churches—Type 4

BRICK—STONE TRIM WITH STEEPLE



FOUNDATION: Full concrete or rubble stone. Finished basement.

WALLS: 13-in. wall, 4-in. face brick four sides with cut stone trim. Leaded art glass windows.

FLOORS: First floor and balcony, hardwood on 2-in.x12-in. joists, 12-in. on center supported by cast iron columns and iron beams.

ROOF: $\frac{1}{2}$ pitch. Steel roof trusses. Slate shingles. Copper flashing and gutters.

INTERIOR CONSTRUCTION:

Auditorium, stair halls, and corridors of fireproof construction. Plastered interior with decorative finish. Oak finish and doors throughout main auditorium and yellow pine in basement. Basement subdivided by accordion partitions for social and auxiliary church purposes. Kitchen facilities provided in basement. Large pipe organ.

SERVICE IMPROVEMENTS: Low pressure steam heating. Ventilating system. Washrooms with good grade fixtures and plumbing. Electric lighting, conduit wiring and good grade fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.43)

Churches—Type 5

STONE—PLAIN EXTERIOR WITH STEEPLE



FOUNDATION: Full concrete or rubble stone. Finished basement.

WALLS: 6-in. Bedford limestone or sand stone facing backed up by common brick furred, plastered. Cut stone lintels and trim. Leaded art glass windows.

FLOORS: Main floor, hardwood on 1-in. sub-floor and paper insulation and 2-in.x12-in. joists, 16-in. on center, supported by cast iron columns. Dressed and matched yellow pine flooring laid on concrete base in basem't.

ROOF: $\frac{1}{2}$ pitched 2-in.x 6-in. rafters, 16-in. on center. Sheet metal or light slate shingles. Tin flashing and gutters.

INTERIOR CONSTRUCTION: Small sized vestibule with one auditorium on main floor.

Basement divided for auxiliary church purposes. Plastered interior painted ordinary grade. Oak seats. Yellow pine and oak doors, trim, and altar. Small organ. **SERVICE IMPROVEMENTS:** Hot air heating. Wash rooms with average grade of fixtures. Electric lighting with ordinary grade of fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.48)

Churches—Type 6

STONE—ELABORATE EXTERIOR WITH STEEPLE



FOUNDATION: 18-in. concrete plastered with finished basement.

WALLS: Limestone, granite or sandstone, backed by common brick furred and plastered. Stone trim and window tracery. Leaded glass art windows.

FLOORS: Tile floors in auditorium, vestibule and chapel aisles. Terrazzo floors in halls and corridors.

ROOF: Steel roof trusses. Slate or tile roofing. Copper flashing and gutters.

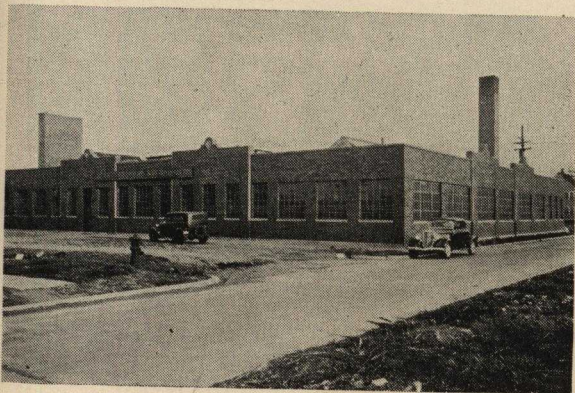
INTERIOR CONSTRUCTION:

Fireproof construction throughout. Auditorium walls finished with ornamented plaster. Remainder of walls and partitions plastered and painted. Hardwood trim throughout. Ample rooms for social and auxiliary church purposes. **SERVICE IMPROVEMENTS:** Low pressure steam heating. Ventilating system. Good grade of plumbing and fixtures. Good grade electric wiring and fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100—\$.55)

FACTORY BUILDINGS

Factories—Type 1—Cheap



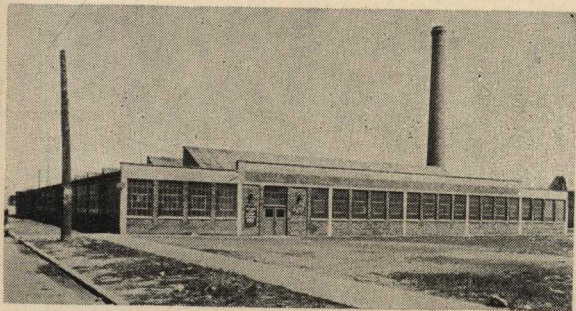
One story; common brick walls with wood sash; flat tar and gravel or built up composition roof on an open joisted interior construction supported by wood truss or wood columns and girders. Concrete floor throughout. Open wiring electric service. Small amount of ordinary plumbing.

(Price per cubic foot of volume, at Boeckh Index No. 100)

Buildings under 5,000 sq. ft. \$.10

Buildings over 5,000 sq. ft.09

Factories—Type 2—Average



One story; small basement for lighting plant; common brick walls with steel sash. Flat built up composition roof on wood joists supported by light steel truss; concrete floors; conduit wiring for electric service. Low pressure steam heating system. Small office with tiled partitions; plumbing sufficient for requirements.

(Price per cubic foot of volume, at Boeckh Index No. 100)

Buildings under 5,000 sq. ft. \$.12

Buildings over 5,000 sq. ft.105

Factories—Type 3



FOUNDATION: Concrete, no basement other than small heating plant.

WALLS: 13-in. face brick front and common brick rear, 9-in. common brick side; steel sash with hand-operated ventilating units. Mechanically operated vents in monitors.

FLOORS: 5-in. concrete base with monolithic finish.

ROOF: Four ply built up felt pitch and gravel on 2-in. dressed yellow pine sheathing and 6-in. x 12-in. yellow pine purlins supported by structural steel roof truss and steel columns in 20-ft. bays. No cranes.

Electric wiring in conduit; steam heating; modern plumbing fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100)

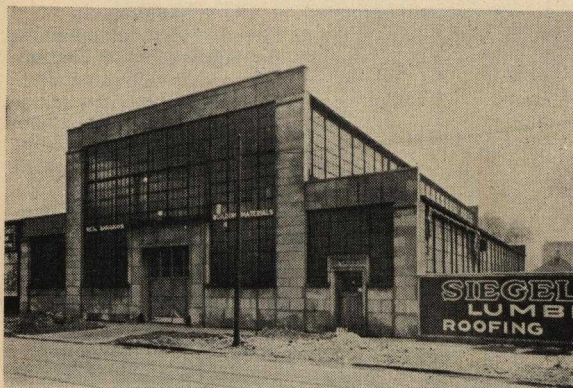
Roof heights 15-ft. and 20-ft.:

Buildings under 5,000 sq. ft.	.....\$ .14
Buildings over 5,000 sq. ft.	..... .12½

Roof heights, 20-ft. and 30-ft.:

Buildings under 5,000 sq. ft.	..... .11½
Buildings over 5,000 sq. ft.	..... .10½

Factories—Type 4



Same as Type 3 with craneway.

(Price per cubic foot of volume, at Boeckh Index No. 100)

Roof heights 15-ft. and 20-ft.:

Buildings under 5,000 sq. ft.	.....\$ .12½
Buildings over 5,000 sq. ft.	..... .11½

Roof heights, 20-ft. and 30-ft.:

Buildings under 5,000 sq. ft.	..... .10½
Buildings over 5,000 sq. ft.	..... .09½

Factories—Type 5—Factory Office



FOUNDATION: Concrete.

WALLS: Face brick with stone trim; wood sash windows; plastered interior.

ROOF: Four ply built up felt pitch and gravel roofing on 2-in. dressed yellow pine sheathing on timber purlins supported by steel girders and steel or wood columns.

INTERIOR FINISH: Good grade yellow pine trim and doors. Metal lath and plaster partitions.

FLOORS: Maple overlay

on mill type construction.

SERVICE IMPROVEMENTS: Steam heat; conduit wiring; modern fixtures; modern plumbing fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100)

Buildings under 5,000 sq. ft. \$.20

Buildings over 5,000 sq. ft.18

Factories—Type 6—Factory Offices



FOUNDATION: Concrete.

WALLS: Face brick with stone trim; steel sash windows; plastered interior.

ROOF: Four ply built up felt pitch and gravel roofing on reinforced concrete slab supported by concrete or steel beams and columns.

FLOORS: Maple or oak flooring on sleepers in concrete slab.

INTERIOR FINISH: Suspended metal lath ceiling; tile or pyrobar partitions;

hardwood or metal trim.

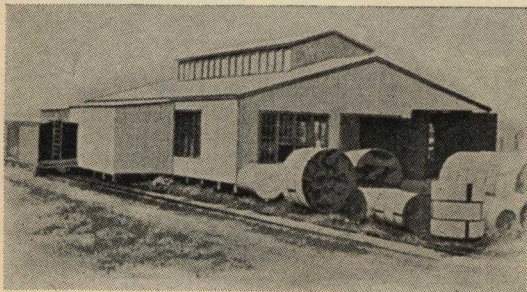
SERVICE IMPROVEMENTS: Steam heat; conduit wiring; good grade electric fixtures; good grade plumbing fixtures.

(Price per cubic foot of volume, at Boeckh Index No. 100)

Buildings under 5,000 sq. ft. \$.24

Buildings over 5,000 sq. ft.22

Factories—Type 7



FOUNDATION: Concrete piers.

WALLS: Corrugated galvanized iron; steel sash on light steel frame.

ROOF: High steel truss corrugated iron surface.

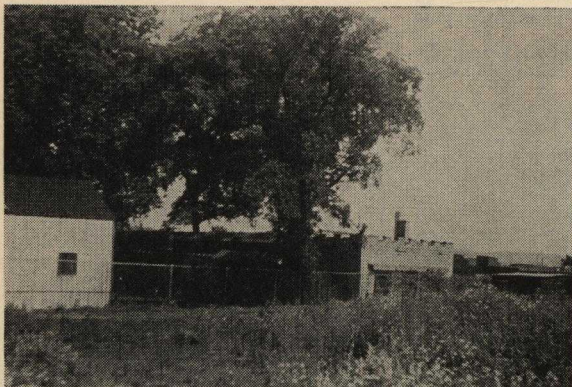
FLOORS: Earth.

OTHER IMPROVEMENTS: Electric wiring in conduit.

(Price per cubic foot of volume, at Boeckh Index No. 100)

Buildings under 5,000 sq. ft.....	\$.08½
Buildings over 5,000 sq. ft.....	.07½

Factories—Type 8—Shop or Storage Building



FOUNDATION: Concrete footings and piers.

WALLS: Concrete block with wood sash lights.

ROOF: Ready rolled roofing on 1-in. sheathing on 2-in.x6-in. rafters, 24-in. on center. Wood beam supported by 6-in.x6-in. wood columns.

OTHER IMPROVEMENTS: Electric lighting, open wiring; average ceiling height 12-ft.

(Price per cubic foot of volume, at Boeckh Index No. 100)

Buildings under 5,000 sq. ft.....	\$.07
Buildings over 5,000 sq. ft.....	.06

Factories—Type 9—Lumber Storage Shed Closed



FOUNDATION: Concrete piers and concrete block footings.

WALLS: 1-in. drop siding on 2-in.x6-in. framing.

ROOF: Rolled roofing on 1-in. sheathing, 2-in.x8-in. rafters, 24-in. on center.

RACKS: Built up rack for lumber storage; electric lighting; no flooring.

(Price per cubic foot of volume, at Boeckh Index No. 100)

Buildings under 5,000 sq. ft.	.....\$ .05
Buildings over 5,000 sq. ft.	..... .04

PUBLIC GARAGES

As this type of building in general construction details resembles and can be found in one of the several types of Factory or Warehouse properties, no special classification is given. Where ramps are found in place of elevators, the ramp costs offset elevator costs and no deviation in charges should be made.

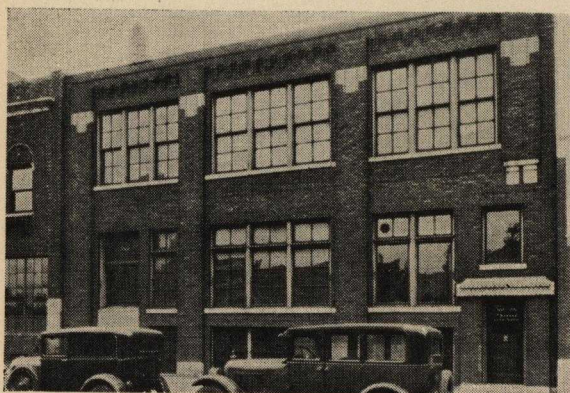
Peculiar types of garages should be treated under the Miscellaneous Building section.

FARM BUILDINGS

These types of structures may be appraised by referring to a similar type among other classifications. See notes on pages 36 (under "Rural and Southern Dwellings") and 179 ("Barns and Sheds.")

FACTORY BUILDINGS OR WAREHOUSES—TWO OR MORE STORIES (JOISTED TYPE)

Type 10



Specifications

FOUNDATION: Concrete, full basement.

WALLS: Common brick bearing type; cast stone lintels and sills; wood sash.

INTERIOR CONSTRUCTION: Double 1-in. flooring on 2-in.x12-in. joists, 12-in. on center, supported by timber beams and wood or cast iron columns.

ROOF: Single pitch built up composition.

SERVICE IMPROVEMENTS: Steam heat, 1 pipe system. Open wiring, ordinary electric fixtures. Average type plumbing fixtures. 2,500 lb. freight elevator. Wood stairways, trap door enclosed.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Two Story Buildings

SQ. FT. GROUND AREA	WALL PERIMETER*							
	200'	300'	400'	500'	600'	700'	800'	900'
12,000	.105	.113	.120	.128	.136	.143	.150	.158
8,000	.118	.125	.132	.140	.148	.155	.162	.174
6,000	.129	.137	.144	.152	.159	.167	.174	
4,000	.142	.149	.156	.163	.172	.179		
2,000	.154	.160	.168	.176				

For areas in excess of those shown above, see Page 37

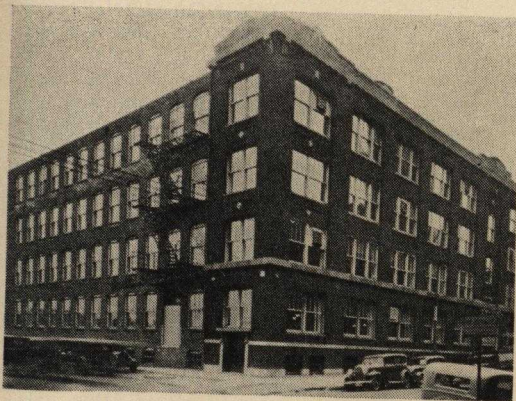
Buildings over two stories add $1\frac{1}{2}\%$ increase to the above prices for each additional story.

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

*NOTE: For correction and interpretation of wall lengths ("sandwich" buildings, party walls, etc.) see treatment, Page 172.

FACTORY BUILDINGS OR WAREHOUSES—TWO OR MORE STORIES (HEAVY JOISTED OR SEMI-MILL)

Type 11



Wood stairway in brick tower.

Specifications

FOUNDATION: Concrete, full concreted basement.

WALLS: Pressed brick front, common brick sides bearing small amount of stone trim; wood sash windows.

INTERIOR CONSTRUCTION: 2-in. planking with 1-in. maple overlay, 3-in.x14-in. joists, 12-in. on center or light timber beams, girders and steel or timber columns. Plastered walls and wood or metal sheathed ceilings.

ROOF: Single pitched built up composition roofing of 2-in. matched planks, wall parapeted.

SERVICE IMPROVEMENTS: Steam heat, 1 pipe system. Electric lighting, conduit wiring average fixtures. 5,000 pound freight elevator in brick shaft and automatic fire doors at all openings. Average type plumbing fixtures.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Two Story Building

(Live Load 80 Pounds per Square Foot)

SQ. FT. GROUND AREA	WALL PERIMETER*								
	200'	300'	400'	500'	600'	700'	800'	900'	1,000'
16,000			.096	.111	.118	.129	.137	.145	.152
14,000		.104	.112	.124	.133	.144	.152	.160	.167
12,000		.120	.128	.138	.148	.158	.167	.175	.183
10,000	.121	.136	.144	.154	.163	.172	.180	.190	.199
8,000	.142	.150	.158	.168	.178	.186	.194	.209	.217
6,000	.155	.165	.173	.185	.191	.200	.208		
4,000	.171	.179	.187	.196	.203	.215			
2,000	.185	.192	.202	.211					

For areas in excess of those shown above, see Page 37

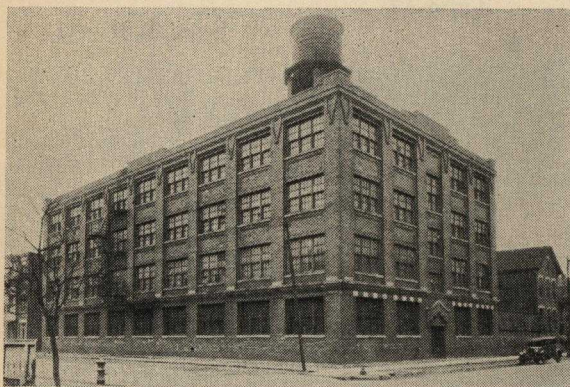
Buildings over two stories add 1½% increase to the above price for each additional story.

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

*NOTE: For correction and interpretation of wall lengths ("sandwich" buildings, party walls, etc.) see treatment, Page 172.

FACTORY OR WAREHOUSE BUILDINGS—THREE OR MORE STORIES (MILL TYPE)

Type 12



Specifications

FOUNDATION: Concrete with full cemented basement.

WALLS: Common brick bearing type or of pilastered and panel construction the pilasters being used to support girders; steel sash windows.

INTERIOR CONSTRUCTION: 3-in. to 4-in. tongued and grooved or splined plank with $\frac{7}{8}$ -in. hardwood overlay supported by wood beams having a cross sectional

area of not less than 72 square inches and spaced 6-ft. to 12-ft. on center. Beams are supported by still heavier girders and by wood posts having not less than 100 square inches of cross sectional area.

ROOF: Gravel covered built up composition on heavy tongued and grooved plank, wall parapeted.

SERVICE IMPROVEMENTS: Steam heat, two pipe system. Electric lighting, conduit wiring. Modern factory plumbing. Stairways of heavy timber or steel construction enclosed in brick tower with fire door cut-off. Electric freight elevators enclosed in brick tower. Fire doors each floor.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Three Story Building

Sq. Ft. GROUND AREA	WALL PERIMETER*								
	200'	300'	400'	500'	600'	700'	800'	900'	1,000'
20,000			.120	.130	.140	.150	.160	.170	.180
18,000			.136	.146	.156	.166	.176	.186	.196
16,000		.142	.152	.162	.172	.182	.192	.202	.212
14,000	.148	.158	.168	.178	.188	.198	.208	.218	.228
12,000	.164	.174	.184	.194	.204	.214	.224	.234	
10,000	.180	.190	.200	.210	.220	.230	.240		
8,000	.195	.205	.215	.225	.235	.245			
6,000	.212	.222	.232	.242					
4,000	.228	.238	.248						
2,000	.244	.254							

For areas in excess of those shown above, see Page 37

Buildings over three stories, add $1\frac{1}{4}\%$ increase to above price for each additional story.

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

*NOTE: For correction and interpretation of wall lengths ("sandwich" buildings, party walls, etc.) see treatment, Page 172.

FACTORY BUILDINGS AND WAREHOUSES—TWO OR MORE STORIES (BRICK AND CONCRETE)

Type 13

Specifications

FOUNDATION: Concrete with full cement basement.

WALLS: 12-in. common brick curtain in reinforced concrete panel.

INTERIOR CONSTRUCTION: Reinforced concrete skeleton framing with heavy two-way reinforced concrete floor slab supported by flared column heads or light slab and heavy reinforced concrete beams and girders with concrete columns.

FLOORS: Monolithic cement floor finish. Partition tile or metal.
Rear story height 10-ft., live load 250 pounds.

ROOF: Built up composition on concrete slab.

SERVICE IMPROVEMENTS: Steam heat, two pipe system. Electric lighting, conduit wiring, standard factory fixtures. Stairways, cut off in tile or brick enclosure, standard fire doors on all openings. Elevator, 5,000 pound freight in brick shaft standard fire doors on openings; modern plumbing.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Three Story Building

WALL PERIMETER*

Sq. Ft. GROUND	200'	300'	400'	500'	600'	700'	800'	900'	1,000'
AREA									
24,000			.187	.192	.195	.199	.203	.207	.212
22,000		.184	.188	.193	.197	.202	.206	.211	.215
20,000		.185	.190	.195	.200	.205	.210	.215	.220
18,000		.187	.192	.198	.203	.209	.214	.220	.226
16,000		.189	.195	.201	.208	.214	.220	.226	.233
14,000		.191	.199	.206	.213	.220	.227	.234	.241
12,000		.195	.203	.212	.220	.228	.237	.245	
10,000	.190	.200	.210	.220	.230	.240	.250		
8,000	.195	.208	.220	.233	.245	.258			
6,000	.203	.220	.237	.253					
4,000	.220	.245	.270						
2,000	.270	.320							

For areas in excess of those shown above, see Page 37

Buildings over two stories, add $1\frac{1}{4}\%$ increase to above price for each additional story.

FOR ADDITIONAL EQUIPMENT, see Special Cost section.

Load capacity less than 250 lbs. per square foot, deduct..... —5%

Load capacity greater than 250 lbs. per square foot, add..... 5%

*NOTE: For correction and interpretation of wall lengths ("sandwich" buildings, party walls, etc.) see treatment, Page 172.

FACTORY OR WAREHOUSE BUILDINGS—THREE
OR MORE STORIES (STEEL AND BRICK)
UNPROTECTED

Type 14



Specifications

FOUNDATION: Concrete with full cemented basement.

WALLS: 12-in. brick curtain supported by steel panel.

INTERIOR CONSTRUCTION: Structural steel frame, steel columns, beams and girders. 12-in. tile arched floor with 4-in. concrete fill or two-way concrete slab. Steel work unprotected; live load 100 pounds per square foot.

FLOOR: Monolithic cement floor finish. Partitions tile or metal. Average floor height 11-ft.

ROOF: Built up composition on concrete slab.

SERVICE IMPROVEMENTS: Steam heat, two pipe system. Electric lighting, conduit wiring, stairways cut off in brick or tile towers. Standard fire doors on all openings. Elevators, 5,000 pound freight in brick shaft, fire doors on all openings. Modern plumbing.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Three Story Building

Sq. Ft. GROUND AREA	WALL PERIMETER*								
	200'	300'	400'	500'	600'	700'	800'	900'	1,000'
24,000			.211	.226	.231	.236	.242	.247	.252
22,000		.218	.223	.229	.234	.240	.246	.251	.257
20,000		.219	.225	.231	.238	.243	.250	.256	.263
18,000		.221	.228	.235	.242	.249	.255	.262	.271
16,000		.224	.232	.239	.247	.255	.262	.270	.278
14,000		.227	.235	.245	.254	.263	.272	.280	.289
12,000	.222	.231	.242	.252	.262	.272	.283	.294	
10,000	.225	.238	.250	.263	.275	.288	.290		
8,000	.231	.246	.263	.278	.294	.310			
6,000	.242	.263	.284	.305					
4,000	.263	.294	.325						
2,000	.320	.420							

For areas in excess of those shown above, see Page 37

For buildings of more than three stories in height, add to base price 1¼% for each additional story.

For each 100 lbs. increase in floor load, increase base price 4%.

*NOTE: For correction and interpretation of wall lengths ("sandwich" buildings, party walls, etc.) see treatment, Page 172.

FACTORY OR WAREHOUSE BUILDINGS—THREE OR MORE STORIES (STEEL AND BRICK) PROTECTED

Type 15



Same general construction as Type 14 except that all steel work is protected by terra cotta tile or incased in reinforced concrete; interior plastered throughout.

Cubic Foot Base Prices

(Price per cubic foot of volume, at Boeckh Index No. 100)

Three Story Building

SQ. FT. GROUND AREA	WALL PERIMETER*									
	200'	300'	400'	500'	600'	700'	800'	900'	1,000'	
24,000			.303	.312	.320	.332	.337	.345	.353	
22,000		.297	.306	.315	.324	.333	.342	.351	.360	
20,000		.300	.310	.320	.330	.340	.350	.360	.370	
18,000		.303	.314	.325	.336	.347	.358	.370	.381	
16,000		.307	.320	.333	.345	.357	.370	.383	.395	
14,000		.313	.327	.341	.356	.370	.384	.398	.412	
12,000	.303	.320	.336	.353	.370	.386	.403	.420		
10,000	.310	.330	.350	.370	.390	.410	.430			
8,000	.320	.345	.370	.395	.420					
6,000	.337	.370	.403	.433						
4,000	.370	.420								
2,000	.480									

For areas in excess of those shown above, see Page 37

Buildings of more than three stories in height, add to base price $1\frac{1}{4}\%$ for each additional story.

For each additional 100 pounds of floor load, add 4% to base price.

Buildings of this general type of construction used as lofts and semi-office purposes with finished hallway, passenger elevators, and plumbing service on each floor, add 15% to base price

*NOTE: For correction and interpretation of wall lengths ("sandwich" buildings, party walls, etc.) see treatment, Page 172.

INTERPRETATION AND CORRECTION OF WALL LENGTHS

DIVISION WALLS

Where division wall is a full bearing wall of standard thickness, treat it as a full wall length in perimeter correction. Where it is only a division or partition wall and of subnormal thickness, give only 2/3 of length in perimeter correction.

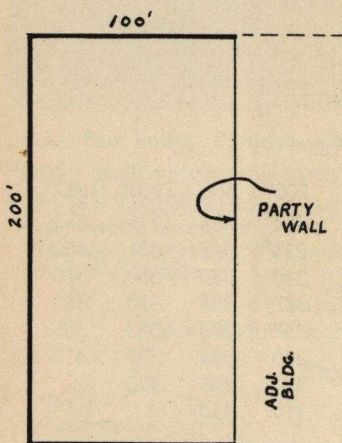
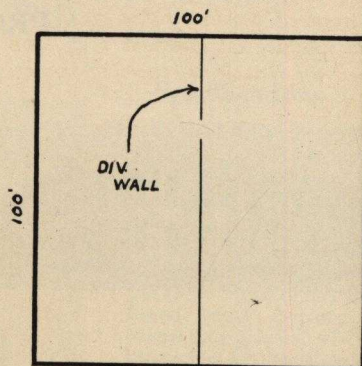
Example—Factory, Type 12, Page 168.

Area 10,000 sq. ft.—full thickness wall length 500 lin. ft.

Cubic foot base price .210c.

Subnormal thickness—wall length 467 ft.

Cubic foot base price (by interpolation) .207c.



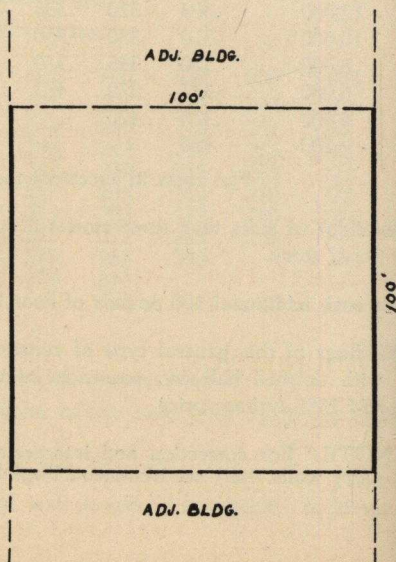
PARTY WALLS

Where one or more walls of a building is a party wall to an adjoining building, one-half of the value only is assumed by the party wall.

Example—Factory, Type 12, Page 168.

Area 20,000 sq. ft.—wall length 500 lin. ft.

Correct base price .130.



SANDWICHED BUILDING

Buildings are often found constructed in between walls of other buildings and having only a front and a rear wall of their own. Where such a condition is found, treat as follows:

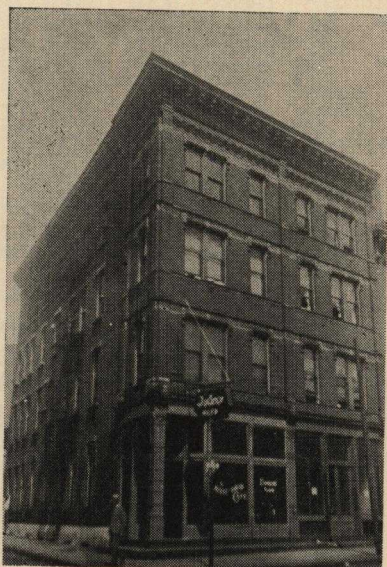
Example—Factory, type 12, Page 168.

Area 10,000 sq. ft.—wall length 200 lin. ft.

Cubic foot base price .180.

MISCELLANEOUS BUILDINGS

A type of building found in the congested areas of cities, that does not fall under the specific classifications such as hotels, stores, office buildings, etc., but which is used for tenements, rooming houses, small commercial enterprises, or a combination of these.



This type is so varied in its construction that to adequately cover it, the following tables of percentage factors were prepared. These tables take into consideration light and heavy construction as given in the previous section, "Good, Bad, and Indifferent Construction." Only the shell factors are given in the tables; charges for service improvements and special equipment are given in the sections dealing with the detail costs of such items.

Miscellaneous Buildings

L—Light; H—Heavy.—Note: Requirements of "Light" and "Heavy" wall construction may be seen under Construction Requirements, page 256.

1. FOUNDATION

Percentage Factors

STORIES CONSTRUCTION	1		2		3		4		5		6		7	
	L	H	L	H	L	H	L	H	L	H	L	H	L	H
Piers	4.3	6.1	6.1	8.0	6.1	8.0	.....	.....	.....	.....	.....	.....	.....	.....
Concrete	6.4	9.1	9.1	12.0	9.1	12.0	12.0	15.3	12.0	15.3	15.3	18.9	15.3	18.9
Cement Block	6.3	.....	9.1	.....	10.7	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stone	9.2	15.4	15.4	20.9	15.4	20.9	20.9	29.0	20.9	29.0	29.0	36.9	29.0	36.9
Brick	11.1	18.4	18.4	26.1	18.4	26.1	26.1	34.8	26.1	34.8	34.8	44.3	34.8	44.3

MISCELLANEOUS BUILDINGS (Continued)

2. BASEMENT

Full excavation	6.3	Cement floor	2.0
Sub-basement	6.3	Wood floor	1.0

3. WALLS

STORIES CONSTRUCTION	1		2		3		4		5		6		7	
	L	H	L	H	L	H	L	H	L	H	L	H	L	H
Frame	5.5		10.8		16.0		.....		.....		.....		.....
Shingle	5.9		11.6		17.2		.....		.....		.....		.....
Stucco on Frame.....	5.9		11.6		17.2		.....		.....		.....		.....
Stucco on Metal Lath....	7.0		13.7		20.3		.....		.....		.....		.....
Stucco on Masonry.....	9.1		17.8		26.5		.....		.....		.....		.....
Common Brick	12.2	17.3	28.8	38.4	45.0	59.5	66.5	85.6	88.0	111.5	113.4	142.0	134.5	168.0
Common Brick (curtain)	17.2		33.6		49.7		66.0		82.5		99.0		105.0	
Face Brick Veneer.....	12.9		25.3		37.6		.....		.....		.....		.....
Face Brick	14.9	20.2	34.4	44.5	53.5	69.5	78.0	99.6	102.0	128.5	133.0	161.0	157.0	190.0
Concrete (Reinforced) ..	11.2	12.2	22.9	24.8	34.6	37.3	47.2	51.0	59.5	64.6	73.4	78.0	87.0	92.2
Stone	19.9	28.2	46.9	62.5	73.3	95.0	108.0	139.0	143.0	181.5	184.0	231.0	219.0	274.0

4. ROOF:

Composition, flat	3.5	Asbestos shingle	10.0
Sheet metal, flat	5.7	Slate shingle	11.3
Composition, shingle	7.8	Tile, interlocking	12.6
Wood shingle	8.9	Sheet metal, pitched	10.8

5. EXTERIOR TRIM per floor:

Plain	3.0	Metal	3.8
Stone	4.8	Plaster on wood lath	7.9
Terra cotta	4.3	Plaster on metal lath	11.1

6. INTERIOR TRIM per floor:

Pine	1.5	Shiplap interior partitions	5.2
Hardwood	2.5	4" tile or gyp. partitions plas.	13.5
Plaster on wood lath	7.9	6" tile or gyp. partitions plas.	21.2
Plaster on metal lath	11.1		

7. FLOORS per floor:

Pine	5.0	Comp. on wood	16.0
Hardwood	10.9	Comp. on concrete	18.0
Reinf. conc., cem. fin.	10.6	Reinf. conc., wood fin.	13.0

8. ATTIC:

Unfinished	3.1		
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9. LIGHTS per floor:

Electric	1.5	Gas	.8
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(Square Foot Base Prices, See Next Page)

MISCELLANEOUS BUILDINGS (Continued)

Square Foot Base Prices

(Price per square foot of ground floor area, at Boeckh Index 100)

Normal					Normal				
Area	Perim.	Cheap	Average	Good	Area	Perim.	Cheap	Average	Good
1000	130	\$5.94	\$9.65	\$14.10	6400	323	4.04	6.81	9.93
1100	135	5.75	9.35	13.65	6600	328	4.02	6.79	9.90
1200	140	5.62	9.12	13.31	6800	333	4.01	6.77	9.88
1300	145	5.48	8.90	13.00	7000	338	4.00	6.76	9.86
1400	150	5.36	8.73	12.75	7400	348	3.99	6.73	9.81
1500	155	5.26	8.55	12.50	7800	358	3.98	6.72	9.79
1600	160	5.18	8.43	12.30	8200	367	3.97	6.71	9.77
1700	165	5.12	8.33	12.15	8600	374	3.96	6.69	9.75
1800	170	5.06	8.23	12.00	9000	384	3.95	6.68	9.73
1900	175	5.00	8.14	11.87	9400	391	3.94	6.66	9.71
2000	180	4.95	8.05	11.75	10000	404	3.93	6.64	9.67
2100	185	4.90	7.96	11.63	10500	415	3.92	6.61	9.64
2200	190	4.85	7.88	11.50	11000	425	3.91	6.60	9.62
2300	195	4.80	7.80	11.40	11500	434	3.90	6.59	9.60
2400	199	4.75	7.72	11.30	12000	443	3.89	6.57	9.57
2500	203	4.71	7.65	11.20	12500	452	3.88	6.55	9.55
2600	207	4.67	7.59	11.10	13000	461	3.87	6.54	9.53
2700	211	4.64	7.54	11.01	13500	470	.....	.....	.....
2800	215	4.60	7.48	10.92	14000	479	3.86	6.51	9.49
2900	219	4.54	7.43	10.84	14500	487	.....	.....	.....
3000	223	4.50	7.39	10.79	15000	495	3.84	6.48	9.44
3100	227	4.47	7.35	10.74	15500	503	.....	.....	.....
3200	231	4.44	7.31	10.69	16000	511	3.82	6.45	9.41
3300	234	4.41	7.27	10.65	16500	519	.....	.....	.....
3400	237	4.38	7.24	10.61	17000	527	3.81	6.43	9.38
3500	240	4.35	7.21	10.57	17500	534	.....	.....	.....
3600	243	4.33	7.18	10.53	18000	541	3.80	6.41	9.35
3700	246	4.31	7.15	10.50	18500	548	.....	.....	.....
3800	249	4.29	7.13	10.47	19000	555	3.79	6.39	9.32
3900	251	4.27	7.11	10.44	19500	562	.....	.....	.....
4000	254	4.25	7.09	10.41	20000	569	3.78	6.37	9.29
4200	261	4.22	7.06	10.35	21000	583	3.77	6.35	9.26
4400	268	4.19	7.03	10.29	22000	597	3.76	6.33	9.23
4600	274	4.17	7.01	10.24	23000	611	3.75	6.31	9.20
4800	280	4.15	6.99	10.20	24000	625	3.74	6.29	9.18
5000	286	4.13	6.97	10.16	25000	639	3.73	6.28	9.16
5200	292	4.11	6.94	10.12	26000	653	3.72	6.27	9.14
5400	298	4.10	6.91	10.09	27000	666	3.71	6.26	9.12
5600	303	4.08	6.89	10.04	28000	678	3.70	6.25	9.10
5800	308	4.07	6.87	10.02	29000	690	3.69	6.24	9.09
6000	313	4.06	6.85	9.99	30000	700	3.68	6.23	9.08
6200	318	4.05	6.83	9.96					

NOTE: When the perimeter differs from the normal, the percentage factor for walls and foundation should be increased or decreased in proportion to the difference between the actual perimeter and the normal perimeter.

Example (1):

If in the three story common brick rooming house in the example on page 175a, the perimeter was 210 ft., the wall percentage factor would be

$$\frac{210}{180} \times 45.0 \text{ or } 52.5$$

Example (2):

If in the warehouse in the example on page 175b, the shape of the building was a rectangle 50'x80' and one of the 80 foot walls was a party wall, the perimeter would be 220 feet and the wall percentage factor would be

$$\frac{220}{254} \times 99.0 \text{ or } 85.7$$

MISCELLANEOUS BUILDINGS (Continued)

The use of these special tables is best illustrated by the following examples:

Example 1. A three story common brick rooming house; ground floor area 2,000 square feet; full basement; concrete foundation; flat composition roof; plain exterior trim; pine for inside trim and doors; pine floors; electric lights; cheap iron lavatory



in each of 48 rooms; bath and toilet on each floor, hot and cold water; low pressure steam heat; cheap construction and building materials throughout.

Item	Percentage Factors
Foundation	9.1
Basement	6.3
Walls	45.0
Roof	3.5
Exterior trim	9.0
Interior trim	4.5
Floors	15.0
Lights	4.5
Cement floor in basement.....	2.0
	<hr/> 98.9
$98.9\% \times 4.95$ (base sq. ft. price) = 4.896	
$2,000 \times 4.896 = 9,792.00$	
Shell cost	9,792.00
Plumbing: Sewer and water connections.....	1,920.00
48 wash stands	1,056.00
Three baths and toilets.....	232.50
Hot water heater.....	150.00
Heating	2,589.30
Total reproduction cost at 100 Index.....	\$15,739.80
Total reproduction cost at 93 (index applicable to date and location) $.93 \times 15,739.80 =$	\$14,638.01

From the above figures must be deducted charges for depreciation and obsolescence.

MISCELLANEOUS BUILDINGS (Continued)

Example 2. A six story common brick warehouse; ground floor area 4,000 square feet; full basement, concrete foundation; flat composition roof; plain exterior trim; pine for inside trim and doors; reinforced concrete floors; electric lights; six wash rooms consisting of one lavatory, one toilet, and one urinal; hot and cold water; steam heat; automatic sprinkler system with city connection; one freight elevator 5,000 pounds; average material and workmanship.

Item	Percentage Factors
Foundation	18.9
Basement	6.3
Walls (curtain)	99.0
Roof	3.5
Exterior trim	18.0
Interior trim	9.0
Floors	63.6
Lights	9.0
Cement floor in basement.....	2.0
	<hr/> 229.3
229.3% \times 7.09 (Square foot base price)=16.26	
4,000 \times 16.26=65,040.00	
Shell	65,040.00
Plumbing: Sewer and water connections.....	840.00
Six lavatories	180.00
Six toilets	240.00
Six urinals	240.00
Hot water heater.....	90.00
Automatic sprinkler system.....	3,920.00
Heating	4,198.00
Elevator	3,700.00
	<hr/>
Total reproduction value at Index 100.....	\$78,408.00
Total reproduction value at Index 91 .91 \times 78,408.00=.....	\$61,351.28

From the figures in the above examples must be deducted charges for depreciation and obsolescence.

PUBLIC SCHOOL BUILDINGS

This type of building should be treated under the breakdown analysis as rendered in this section (Miscellaneous Buildings). Auditoriums, if large, should be treated separately under Theatres. Buildings with large rooms and few partitions, reduce interior trim and partition factors by 25%. Where there is no interior partition of account, reduce factors 50%.

Chapter VI

INDIVIDUAL COSTS SECTION

PORCHES

PORCHES or outside attachments to be of a true asset to the property as a whole must be of the same or similar construction as the main building. In analyzing the value we must assume that if the general characteristics of the main construction are carried into the porch construction, the cost of this construction is in a ratio to the main building shell costs.

Therefore, instead of breaking down the unit cost for the porches we use their cubical contents and take a proportion of this contents, according to the type of construction of the porch and that of the main building shell, after allowance has been made for the variation of construction as shown in the following tables.

NOTE NO. 1 If piers are used instead of solid foundation, *reduce* table percentage 10 points.

NOTE NO. 2: If brick masonry is used instead of stone, *reduce* table percentage 5 points.

1. Concrete or Stone Foundation—Reinforced Concrete Floor:

- (a) With stone columns, stone arch lintels, roof of same construction as main building
 - Stone building, use 50% of cubical contents.
 - Brick building, use 60 % of cubical contents.
 - Frame building, use 70% of cubical contents.
- (b) With stone columns, frame lintels, roof same construction as main building.
 - Stone building, use 40 % of cubical contents.
 - Brick building, use 50% of cubical contents.
 - Frame building, use 60% of cubical contents.
- (c) With wood columns, frame lintels, roof same construction as main building.
 - Stone building, use 30% of cubical contents.
 - Brick building, use 40% of cubical contents.
 - Frame building, use 50% of cubical contents.

2. Concrete or Stone Foundation—Wood Floors:

- (a) With stone column, stone arch lintels, roof same construction as main building.
 - Stone building, use 40% of cubical contents.
 - Brick building, use 50% of cubical contents.
 - Frame building, use 60% of cubical contents.

- (b) With stone columns, frame lintels, roof same construction as main building.
 Stone building, use 30% of cubical contents.
 Brick building, use 40% of cubical contents.
 Frame building, use 50% of cubical contents.
- (c) With wood columns, frame lintels, roof same construction as main building.
 Stone building, use 25% of cubical contents.
 Brick building, use 35% of cubical contents.
 Frame building, use 45% of cubical contents.

PORCHES—SQUARE FOOT BASIS

Where it is inadvisable to use the percentage of cubical volume of porches in conjunction with the general appraisal of a property, the following flat prices are given for use in calculating, based on the square foot area of porches.

Good porch construction with face brick or heavy columns and cornice, concrete or stone steps.

	GOOD BRICK PER	BRICK VENEER OR GOOD FRAME SQUARE FOOT OF	CHEAP FRAME AREA
Typical entrance porch 25 sq.ft.	\$5.60	\$3.10	\$2.80
Typical entrance porch 50 sq.ft.	3.75	2.80	2.50
Typical entrance porch 100 sq.ft.	3.10	2.50	1.75
Typical entrance porch 150 sq.ft.	2.50	2.00	1.50
Typical open veranda 100 sq.ft.	1.50	1.25	1.00
Typical open veranda 150 sq.ft.	1.25	1.00	.75

NOTE: Glass enclosure for the above, add \$1.00 per square foot to price of porch.

CANOPIES:	PER SQ. FT. OF AREA
Asbestos protected metal.....	\$.45
Glass on steel frame.....	1.00
Glass on wood frame.....	.75
Marquise	2.50
Metal on steel frame.....	.40
Metal on wood frame.....	.30
Wood .....	.35
PLATFORMS:	
Loading—masonry .....	.80
wood .....	.50
Suspended wood platforms in buildings, walkways, etc. ....	.20

BUILT-IN GARAGE

(Boeckh Index No. 100)

Fireproof construction with cement plaster and metal lath ceiling; concrete or brick division wall between garages and balance of basement. Built in as part of building; not merely attached.

SIZE	ALLOWANCE PER CAR			
	1-CAR	2-CAR	3-CAR	4-CAR
10-ft.x20-ft.	\$120.00	\$180.00	\$240.00	\$300.00
10-ft.x18-ft.	110.00	170.00	230.00	290.00
9-ft.x18-ft.	105.00	165.00	225.00	285.00
9-ft.x16-ft.	95.00	160.00	220.00	280.00
8-ft.x18-ft.	90.00	155.00	215.00	275.00
8-ft.x16-ft.	85.00	150.00	210.00	270.00

GARAGE DOORS:

Set of two swinging doors, Japanese hardwood, no locks.....	\$ 30.00	\$ 60.00	\$ 90.00	\$120.00
Special overhead sliding doors yellow pine construction	75.00	150.00	225.00	300.00
Same in oak.....	100.00	200.00	300.00	400.00

BASEMENT METAL CLAD DOORS:

Homemade, edges of metal not turned, \$15.00.

Manufactured by tinner but not standard N. F. P. A., \$35.00.

Standard automatic fire door, 3-ft.x7-ft., labeled, \$60.00.

LIGHT in conduit, allow \$10.00 per outlet.

WATER, allow \$10.00 per tap.

HEAT: Gas heater, \$25.00 per car; steam coils, \$50.00 per car.

The above charges are based on Boeckh Index No. 100, cost subject to allowance for construction conditions as follows:

Cheap construction, deduct 10% from cost.

Average construction, use above figures.

Good construction, add 10% to cost.

Expensive construction, add 20% to cost.

DETACHED GARAGE

(Boeckh Index No. 100)

Specifications

FOUNDATION AND FLOOR: Full concrete with drain, foundation footings at least 8-in. for frame and 10-in. on brick walls, extending to below frost line.

Dirt floor only, deduct per sq. ft. —25 cents.

No floor drain, deduct per sq. ft. —3 cents.

WALL: Frame, 2-in.x4-in. studding, 16-in.x24-in. on center, 6/8-in. tongued and grooved sheathing with lap siding or shingles; no inside plaster or sheathing; standard height of wall to eaves, 8-ft.

WALL: Brick, 8-in. wire cut or face brick, medium grade; side walls 8-ft. to eaves. Foundation and footings of sufficient strength to carry wall requirements. Increase base price 5% for each additional foot above 8-ft.

INTERIOR: Sheathed interior, wood tongued and grooved sheathing, add 15 cents per square foot floor area.

Wood lath and plaster sheathing, high grade work, add 20 cents per square foot of floor area.

Metal Lath and cement plaster sheathing high grade work, add 25 cents per square foot floor area.

ROOF: Medium grade composition shingles laid on tongued and grooved sheathing, roof hip or gable construction.

Rolled roof, deduct 10 cents per square foot of floor area.

Wood shingle roof, add 25 cents per square foot of floor area.

Tile roof, add 55 cents per square foot of floor area.

DOORS, WINDOWS AND HARDWARE: Yellow pine panel double doors equipped with standard Japanned hardware.

NOTE: Specification based on average type of construction.

Base Price per Square Foot

	Good	Average	Cheap
1 car frame or concrete block.....	\$1.80	\$1.50	\$1.10
2 car frame or concrete block.....	1.55	1.20	1.00
3 car frame or concrete block.....	1.40	1.00	.....
4 car frame or concrete block.....	1.30	.....	.....
1 car brick veneer.....	2.35	1.85	.....
2 car brick veneer.....	1.95	1.55	.....
3 car brick veneer.....	1.70	.....	.....
4 car brick veneer.....	1.55	.....	.....
1 car brick.....	3.00	2.05	1.75
2 car brick.....	2.60	1.90	1.50
3 car brick.....	2.40	.....	.....
4 car brick.....	2.30	.....	.....

NOTE: Cheap grade brick garage has common brick walls.

BARNs AND SHEDs

Where it is impossible to treat Barns or Sheds under detached garage classification, either due to the fact that they are too large or have more than one story, treat these buildings under Miscellaneous Buildings, page 173.

BUILT-IN SERVICE FIXTURES

All Prices Include Material and Installation Costs at
Boeckh Index '100

BREAKFAST NOOK: Consisting of table and two seats. Manufactured by mill.		pedestals with adjustable book shelves and two square columns:	
Light construction, yellow pine.....	\$30.00	Yellow pine	\$120.00
Heavy construction, yellow pine	40.00	Plain oak	135.00
Light construction, oak or birch..	36.00	Writing desk instead of book case:	
Heavy construction, oak or birch	48.00	Yellow pine	140.00
CABINET, BOOK:		Plain oak	160.00
2 door yellow pine construction.....	\$30.00	Round columns without book case or desk:	
2 door oak construction.....	35.00	Yellow pine	50.00
Add \$5.00 for leaded glass doors.		Plain oak	65.00
CABINET, BROOM:		IRONING BOARDS:	
Yellow pine construction.....	\$20.00	Yellow pine construction.....	\$17.50
CABINET, CHINA:		IN-A-DOOR BEDS:	
Wall type, yellow pine.....	\$30.00	Standard make, single.....	\$40.00
Wall type, oak.....	35.00	Standard make, double.....	45.00
Corner type, yellow pine.....	60.00	LAUNDRY DRYERS: Standard make, all metal construction, gas heated:	
Corner type, oak.....	70.00	Small size	\$40.00
CABINET, KITCHEN:		Large size	60.00
Yellow pine construction, small.....	\$45.00	MIRROR DOORS:	
Yellow pine construction, large.....	65.00	Glazed plain plate	
CABINET, LINEN OR DRESSING:		Width Yellow Pine Birch Oak	
Yellow pine construction, small.....	\$35.00	2-ft. 0-in. \$20.00 \$24.00 \$27.00	
Yellow pine construction, large.....	47.00	2-ft. 4-in. 24.00 27.00 30.00	
CABINET, MEDICINE:		2-ft. 6-in. 27.00 30.00 35.00	
Wood frame, plain glass.....	\$12.00	Beveled plate, add 20%.	
Venetian mirror, plain.....	25.00	METAL WEATHER STRIPPING:	
Venetian mirror, decorative.....	32.00	Standard installation of standard make.	
CABINET, PANTRY:		Per window	\$3.00
Yellow pine construction, small.....	\$50.00	Per door	5.00
Yellow pine construction, large.....	75.00	PANEL WORK:	
CABINET, TELEPHONE:		Yellow pine enameled, per sq. ft.....	\$3.00
Yellow pine construction.....	\$ 9.00	Hard wood, per sq. ft.....	4.00
Oak construction	13.00	RANGES, GAS:	
CLOSET, CEDAR:		Small units	\$40.00
Small	\$15.00	Medium units	50.00
Large	25.00	Large units	60.00
CLOTHES CHUTES: Metal construction with basket at the end.		SCREENS:	
1 floor	\$45.00	Black wire, per window.....	\$3.00
2 floors	55.00	Black wire, per door.....	4.50
3 floors	65.00	Galvanized wire, per window.....	4.00
Wood construction, deduct 10%.		Galvanized wire, per door.....	6.00
No catch basket, deduct 50%.		Copper wire, per window.....	5.00
INCINERATOR: Built-in to chimneys.		Copper wire, per door.....	7.50
Residence	\$150.00	VENT FANS: Electric installed in wall or window:	
4 to 8 apartments.....	175.00	Small, residential	\$20.00
10 to 20 apartments.....	200.00	Large, residential	25.00
20 to 30 apartments.....	250.00	VAULT:	
30 to 50 apartments.....	350.00	Figure construction and add for door	\$50.00
Institutional	450.00	Figure construction and add for steel door with combination lock, burglar-proof	150.00
Prices do not include cost of chimneys.			
INTER-ROOM OPENINGS: Consisting of complete openings including two			

ELEVATORS

HAND HOISTS: 2,000 lbs. capacity, two story building, erected complete.

<i>Cab Size</i>	<i>Price per Unit</i>
4-ft.x4-ft.	\$225.00
5-ft.x5-ft.	250.00

Add \$25.00 for each additional story.

FREIGHT, ELECTRIC: Overhead machines, three story buildings or under, erected complete:

<i>Load</i>	<i>Price per Unit</i>
1,500-2,000 lbs.	\$2,000.00
2,500	2,700.00
3,000	2,900.00
3,500	3,050.00
4,000	3,200.00
5,000	3,700.00
6,000	4,300.00
8,000	5,500.00
10,000	5,800.00

Add \$300.00 if machine is in basement.

Add \$75.00 for each additional story.

Add \$1,300.00 if elevator is self-leveling.

HYDRAULIC, one story:

1,000-2,500 lbs.	\$1,000.00
3,000-6,000 lbs.	1,500.00

PASSENGER: Plain construction, wrought iron and steel doors, steel cab, two story building.

<i>Cab Size</i>	<i>Price per Unit</i>
6-ft.x6-ft.	\$4,000.00
8-ft.x8-ft.	5,000.00

Add \$70.00 for each additional story.

Automatic, plain construction, two story building.

<i>Cab Size</i>	<i>Price per Unit</i>
4-ft.x6-ft.	\$3,000.00

DUMMY:

Electrically operated.....	\$1,000.00 to \$2,500.00
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Manually operated....\$350.00 to \$500.00

FIREPLACES

ORDINARY BRICK mantel wood shelf, quarry tile hearth—gas fire only:

5 -ft. mantel	\$ 65.00
5½-ft. mantel	75.00
6 -ft. mantel	85.00

GOOD GRADE BRICK mantel, same as above:

5 -ft. mantel	\$ 80.00
5½-ft. mantel	90.00
6 -ft. mantel	100.00

COLONIAL TYPE brick and wood gas fired:

5 -ft. mantel	\$120.00
5½-ft. mantel	135.00
6 -ft. mantel	150.00

TILE MANTEL including tile hearth and wood shelf:

	<i>Ordinary Grade</i>	<i>Good Grade</i>
5 -ft.	\$ 85.00	\$100.00
5½-ft.	100.00	125.00
6 -ft.	115.00	140.00

EXTRAS:

Ash pits, allow.....	\$ 50.00
Ornamental chimneys.....	\$50.00 100.00
Gas logs	25.00 40.00

For special tile mantels such as Rookwood, prices will range as high as \$350.00.

NOTE: Fake mantels, where fire-place is constructed against wall, without chimney or fire box, deduct 50% of the above price.

GREEN HOUSES

(Private)

Base price per square foot of area:

<i>Average</i>	<i>Good</i>	<i>Expensive</i>
\$1.50	\$2.50	\$4.00

NOTE: Prices include building, heating plant, stacks and piping. Area includes boiler house along with main green house buildings.

HEATING

	<i>Cheap</i>	<i>Average</i>	<i>Good</i>	<i>Expensive</i>
Hot air, per room	\$30.00	\$35.00	\$40.00	\$45.00
Hot water, per room	75.00	75.00	90.00	110.00
Steam, per room	65.00	65.00	80.00	100.00
Vapor, per room	75.00	75.00	90.00	110.00

When estimating heating of irregular or large room or open floor building, divide the net cubic feet by the factor shown below and multiply the square feet of radiation thus obtained by the cost ratio also given below, which includes cost of boiler but not pipe covering.

STEAM HEATING, direct radiation:

Office buildings	1 sq.ft. to 60 cu.ft. air
Factories	1 sq.ft. to 125 cu.ft. air
Churches	1 sq.ft. to 175 cu.ft. air
Assembly halls	1 sq.ft. to 200 cu.ft. air

HOT WATER HEATING, direct radiation:

Office buildings	1 sq.ft. to 40 cu.ft. air
Factories	1 sq.ft. to 70 cu.ft. air
Churches	1 sq.ft. to 90 cu.ft. air
Assembly halls	1 sq.ft. to 100 cu.ft. air

NOTE: Indirect radiation, 50% more surface.

Direct-indirect radiation, 25% more surface (both classes of heating).

COST RATIO:

*Per Ft.
Radiation*

Heavy wall buildings, small windows, plain equipment.....	\$2.00
Heavy wall buildings, small windows, elaborate equipment....	2.15
Light wall buildings, large windows, plain equipment.....	2.10
Light wall buildings, large windows, elaborate equipment.....	2.25

AUTOMATIC REGULATION, thermostat control:

Time clock system complete with

steam or water safety gauge, stick safety device.....	\$125.00
Clock, automatic control, manual winding	75.00
Compressed-air system, ordinary work per room.....	35.00
Compressed-air system, large areas per thermostat.....	25.00

STOKERS, automatic coal feed with special built grating:

Small residence	\$350.00
Medium residence	450.00
Large residence	550.00
Small apartment	750.00
Large apartment	900.00
Factory type, \$9.00 per horse-power of boiler.	

The above prices include thermostat control.

OIL BURNERS, including burner, inside tanks, and automatic control equipment:

Small residence	\$ 450.00
Medium residence	600.00
Large residence	800.00
Small apartment	1,500.00
Large apartment	1,800.00
Outside supply tank buried, allow 12 cents per gallon according to size of tank.	

Allowance to be made for boilers when heat is furnished from outside source:

RESIDENCES, radiation requirements, steam—vertical:

300 to 500 sq. ft., deduct 27c from base rate.

500 to 800 sq. ft., deduct 25c from base rate.

800 to 1,000 sq. ft., deduct 23c from base rate.

Hot water boilers, 20% less.

SECTIONAL BOILERS, radiation requirements, steam, low pressure:

800 to 1,000 sq. ft., deduct 25c from base rate.

1,000 to 1,500 sq. ft., deduct 23c from base rate.

1,500 to 2,000 sq. ft., deduct 21c from base rate.

2,000 to 2,500 sq. ft., deduct 19c from base rate.

2,500 to 3,000 sq. ft., deduct 18c from base rate.

3,000 to 5,000 sq. ft., deduct 17c from base rate.

Hot water boilers, 30% less.

NOTE: Deductions to be made from base rates given on previous page.

PARTITIONS

	PRICE PER SQ. FT.			
	<i>Cheap</i>	<i>Average</i>	<i>Good</i>	<i>Expensive</i>
Brick, common 8-in.....	\$.575	\$.640	\$.685	\$.710
Brick, common 12-in.....	.810	.900	.960	1.000
Hollow tile, 4-in.....	.180	.200	.215	.220
Hollow tile, 8-in.....	.280	.315	.335	.350
Hollow tile, 10-in.....	.385	.430	.460	.480
Plaster on wood lath.....	.100	.120	.130	.140
Plaster on metal lath.....	.150	.165	.175	.185
Plaster on masonry.....	.080	.090	.095	.100
Wall board one side.....	.110	.120	.130	.135
Wall board two sides.....	.160	.180	.190	.200
1-in. sheathing.....	.065	.075	.080	.085
Celotex sheathing.....	.050	.060	.065	.070
2-in.x.4-in. studding.....	.050	.060	.065	.070
Balsam wood insulation.....	.060	.070	.075	.080
Portland cement on metal lath.....	.180	.200	.215	.220
Lead and oil painting (two coats).....	.030	.040	.045	.045
Lead and oil painting (three coats).....	.040	.050	.055	.055

PLUMBING INSTALLATION

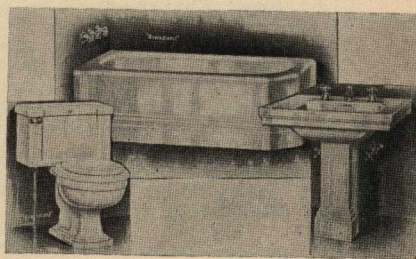
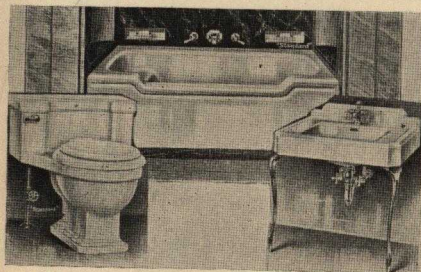
RESIDENCES: \$2.00 per foot of set-back from street to cover sewer and water connections plus \$40.00 per fixture on one story building or \$45.00 per fixture on two and three story buildings.

APARTMENT BUILDINGS, STORES, ETC.: \$3.00 per foot of set-back from street to cover sewer and water connections plus \$35.00 per fixture in building of large number of fixtures. \$45.00 per fixture in building where only few fixtures are located.

Classification of Plumbing Fixtures referred to in specification on next page

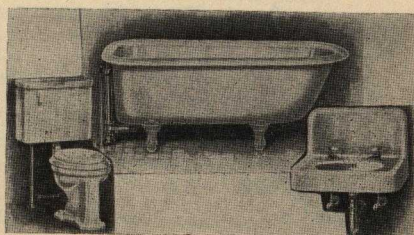
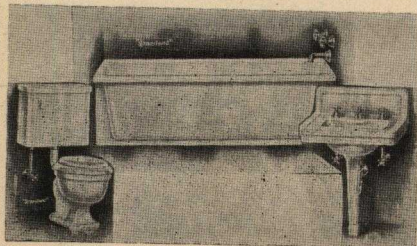
Class A—Expensive

Class B—Good



Class C—Average

Class D—Cheap



THREE UNIT BATHROOMS

	<i>Cheap</i>	<i>Average</i>	<i>Good</i>	<i>Expensive</i>
Bath	\$37.50	\$70.00	\$110.00	\$190.00
Lavatory	30.00	45.00	85.00	175.00
Water closet	40.00	55.00	60.00	100.00

Finished in color, add 25%.

Concealed water supply on water closet, add 5%.

Brass piping used in place of C. I., allow \$8.00 per fixture.

Where extra fixtures occur in residences on the first floor or basement only, allow \$40.00 per fixture.

KITCHEN SINKS

Massive design with 8-in. deep drop apron, enameled iron, made only in acid-resisting enamel.

Two drain boards:

Large, 22-in.x78-in.	\$150.00
Small, 22-in.x60-in.	125.00

One drain board:

Large, 22-in.x52-in.	100.00
Small, 22-in.x42-in.	90.00

Corner fixture, one drain board:

Large, 22-in.x52-in.	110.00
Small, 22-in.x42-in.	100.00
In color, add 15%.	

Standard design 6-in. deep drop apron, enameled.

Two drain boards:

Large, 22-in.x78-in.	100.00
Medium, 22-in.x74-in.	95.00
Small, 22-in.x60-in.	65.00

One drain board:

Large, 22-in.x78-in.	75.00
Medium, 22-in.x74-in.	65.00
Small, 22-in.x60-in.	45.00
Same as above but corner fixture, add \$5.00.	

No drain board, sink only:

Large, 20-in.x36-in.	50.00
Small, 20-in.x24-in.	48.00

Roll rim type, enameled iron fixture.

Two drain boards:

Large, 22-in.x60-in.	75.00
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One drain board:

Large, 22-in.x60-in.	70.00
Medium, 20-in.x52-in.	50.00
Small, 20-in.x42-in.	40.00
Corner fixture, one drain board, add \$5.00.	

No drain board, sink only:

Large, 22-in.x42-in.	35.00
Medium, 22-in.x30-in.	25.00
Small, 18-in.x24-in.	20.00

NOTE: Non-standard make or unlabeled fixture or culls, reduce price 50%.

WATER HEATERS

AUTOMATIC COIL TYPE:

2¾-3 gal. per minute, small.....	\$100.00
2¾-3 gal. per minute, large.....	150.00
Charge for tank extra, 15c gallon.	

AUTOMATIC STORAGE TYPE, gas fired, fully covered with automatic control:

20 gal. capacity	\$ 60.00
30 gal. capacity	75.00
40 gal. capacity	90.00

AUTOMATIC STORAGE TYPE, coal fired, fully covered, automatic damper:

30 gal. capacity	\$ 75.00
40 gal. capacity	85.00
60 gal. capacity	95.00
80 gal. capacity	110.00
Large tank, 12c gallon extra.	

GALVANIZED IRON STORAGE TANK, with automatic gas burner, or coil type burner with automatic gas control:

20 gal. capacity	\$ 40.00
30 gal. capacity	50.00
40 gal. capacity	60.00
60 gal. capacity	70.00
80 gal. capacity	80.00
100 gal. capacity	100.00
150 gal. capacity	150.00

GALVANIZED IRON STORAGE TANK with coil type burner:

20 gal. capacity	\$ 25.00
30 gal. capacity	35.00
40 gal. capacity	45.00

NOTE: If above is covered with asbestos jacket, add \$10.00.

SHOWER BATHS

Type A: Over bath including valves, shower head, rod and curtains, nickel plated\$ 17.50

Type B: Over bath same as above but with concealed mixing valve 45.00

Type C: Complete enclosed unit,
 Without mixer 115.00
 With mixer 140.00
 With plateglass door..... 200.00

NOTE: Reduce unit installation charge one-half on showers over bath.

NOTE: Charge extra for all tile work on separate showers.

LAUNDRY TRAYS

Composition slate:

Two compartments	\$ 30.00
Three compartments	40.00

Porcelain units:

Two compartments	80.00
Three compartments	115.00

URINALS

Cheap wall fixtures	\$15.00
Pedestal 30-in., no partition.....	35.00
Solid porcelain 48-in. pedestal.....	80.00

DRINKING FOUNTAINS

Pedestal, vitreous china, 30-in.....	\$45.00
Bracket, vitreous china.....	35.00
Cast iron pedestal	25.00

FACTORY RANGE LAVATORIES

(Unit of two with fittings)

Plain installation	\$40.00
Good installation	60.00

SLOP SINKS

All over enameled, small.....	\$60.00
All over enameled, large.....	75.00
Upper surface only enameled, small.....	45.00
Upper surface only enameled, large.....	55.00

AUTOMATIC SPRINKLER EQUIPMENT

Area covered by each sprinkler head varies from 64 to 100 square feet per head, depending on the construction of the building, spacing of the bays, etc. Systems are also classed as to their water supply, such as city connections, gravity tank or pressure tanks. Also they are classed on whether they are wet or dry. On the wet system the water is in the pipes all the time, in the dry system, air pressure holds the water behind the dry valve which automatically releases when a head opens.

HEAD COUNT: Prices include all pipe fittings, hangers, heads, and labor installed complete, including alarm or dry pipe valve and cutoff valve above the ground.

	<i>Mill Construction</i>		<i>Reinforced Concrete</i>	
	Dry	Wet	Dry	Wet
Up to 500 heads.....	\$8.15	\$7.85	\$9.00	\$8.75
Up to 1,000 heads.....	7.35	7.10	8.20	8.00
Up to 3,000 heads.....	6.80	6.55	7.65	7.40
Over 3,000 heads.....	6.50	6.25	7.35	7.10

UNDERGROUND PIPING: Including excavation and laying. To be evaluated to city connection or tanks.

	4-in.	6-in.	8-in.
Price per foot.....	\$1.40	\$1.75	\$2.40

FITTINGS, ETC.:

- Allow 3 extra feet for Elbows.
- Allow 5 extra feet for Tees.
- Allow 6 extra feet for Crosses.

EXHAUSTERS FOR DRY PIPE SYSTEMS:

Installed complete on system, allow.....\$125.00

ALLOWANCE FOR ALARM OR DRY PIPE VALVE:

Plain valve, 4-in.....\$150.00
 Plain valve, 5-in.....165.00
 Plain valve, 6-in.....180.00
 Plain valve, 8-in.....225.00
 Alarm Attachment: Electric, \$125.00; Water Motor, \$90.00.
 Dry pipe valve, 4-in.....\$250.00
 Dry pipe valve, 6-in.....325.00
 Dry pipe valve, 8-in.....360.00

NOTE: These items to be deducted from head count price when not used.

WOOD TANKS, Cypress:

Installed, but without cost of tower included.

5,000 gallon	\$ 450.00	30,000 gallon	1,815.00
7,500 gallon	590.00	35,000 gallon	2,100.00
10,000 gallon	780.00	40,000 gallon	2,385.00
12,000 gallon	793.00	50,000 gallon	2,775.00
15,000 gallon	1,000.00	60,000 gallon	3,140.00
18,000 gallon	1,065.00	75,000 gallon	3,800.00
20,000 gallon	1,195.00	100,000 gallon	4,690.00
25,000 gallon	1,560.00		

NOTE: Discount 20% for fir.

ANGLE IRON TOWERS, Wood Tanks:

Up to

7,500 gal. tanks first 20 ft.....	\$ 475.00	
add for each add. 10 ft.....		\$125.00
12,000 gal. tanks first 20 ft.....	675.00	
add for each add. 10 ft.....		175.00
18,000 gal. tanks first 20 ft.....	910.00	
add for each add. 10 ft.....		200.00
22,000 gal. tanks first 20 ft.....	1,245.00	
add for each add. 10 ft.....		210.00
25,000 gal. tanks first 20 ft.....	1,390.00	
add for each add. 10 ft.....		260.00
30,000 gal. tanks first 20 ft.....	1,550.00	
add for each add. 10 ft.....		305.00
35,000 gal. tanks first 20 ft.....	2,030.00	
add for each add. 10 ft.....		325.00
40,000 gal. tanks first 20 ft.....	2,300.00	
add for each add. 10 ft.....		400.00
60,000 gal. tanks first 20 ft.....	2,660.00	
add for each add. 10 ft.....		500.00

PRESSURE TANKS, steel riveted, including supports and installation:

500 gallon	\$ 260.00
1,000 gallon	400.00
5,000 gallon	665.00
10,000 gallon	800.00
12,000 gallon	900.00
15,000 gallon	1,250.00

TANK HEATERS, price installed:

No. 1	\$ 95.00
No. 2	107.00
No. 3	175.00
No. 4	265.00

AIR PUMP, installed:

2¼-in.x6-in. single belted with stand	\$ 75.00
3½-in.x6-in. duplex with stand.....	90.00
3½-in.x6-in. duplex A. C. motor drive D. C.....	335.00
Duplex A. C. motor drive A. C.....	300.00

INDICATOR POST VALVES:

4-in.	\$ 40.00
5-in.	50.00
6-in.	70.00
8-in.	120.00

METERS:

2-in.	\$ 95.00
4-in.	300.00
6-in.	600.00

CHECK VALVES:

4-in.	\$ 20.00
5-in.	27.00
6-in.	36.00
8-in.	66.00

STEEL TANKS, price installed with angle towers and steel cover:

5,000 gal. tank with 15-ft. tower.....	\$ 675.00
add \$ 80.00 for each additional 10 ft. of tower.	
10,000 gal. tank with 15-ft. tower.....	1,050.00
add \$130.00 for each additional 10 ft. of tower.	
15,000 gal. tank with 15-ft. tower.....	1,295.00
add \$155.00 for each additional 10 ft. of tower.	
20,000 gal. tank with 15-ft. tower.....	1,535.00
add \$190.00 for each additional 10 ft. of tower.	
25,000 gal. tank with 15-ft. tower.....	1,725.00
add \$195.00 for each additional 10 ft. of tower.	
30,000 gal. tank with 15-ft. tower.....	1,970.00
add \$205.00 for each additional 10 ft. of tower.	

STAND PIPE AND HOSE where attached to system as additional protection allow per unit

50-ft. 1½-in. underwriters hose, nozzle and hanger	
Equipment	\$35.50
Piping and installation	30.50

STAIRWAYS

RESIDENTIAL, open type. Oak treads, hardwood turned newels, balusters, and spindles:

	First Flight	Second Flight	Additional Landing
Colonial	\$375.00	\$325.00	\$35.00
Plain turned	330.00	280.00	30.00
Plain	225.00	175.00	25.00

RESIDENTIAL, semi-open type. Oak treads, hardwood turned newels, balusters, and spindles.

	First Flight	Second Flight	Additional Landing
Colonial	\$300.00	\$265.00	\$35.00
Plain turned	255.00	220.00	30.00
Plain	180.00	145.00	25.00

BOX TYPE:

Oak treads, risers, and stringers, plain starting step.

First flight	\$135.00
Second flight	100.00
Additional landing	20.00
Circular starting step.....	20.00
Colonial starting step.....	40.00

NOTE: All prices are based on hardwood. For pine construction deduct 25%.

OFFICE AND FACTORY:

Concrete, per vertical foot.....	\$15.00
Steel, per vertical foot.....	18.00
Wood, per vertical foot.....	8.00

WROUGHT IRON:

Oak treads, risers, and stringers; wrought iron handrail and spindles. Straight open construction.

First flight	\$400.00
Second flight	350.00
Additional landing	30.00
Circular starting step.....	50.00

NOTE: If width is greater than 4-ft., add 20% to above prices for each additional foot in width.

FIRE ESCAPES:

Platform, per sq. ft.....	\$ 2.25
Stairs, per lin. ft.....	8.50
Counter balance	90.00

SWIMMING POOLS

CONCRETE WITH CEMENT FINISH:

Price
per Sq. Ft.

Plain pool	\$2.00
Pool with scum gutter.....	2.25
Scum gutter and circulating pump.....	3.25
Scum gutter and circulating pump and chlorinator.....	4.00
Complete with filter plant.....	6.50

TILE POOL:

Ordinary hexagon, increase above prices by 50%.
Expensive tile, increase above prices by 75%.

SAND BEACH:

Ordinary sand	\$1.00
White lake sand.....	1.50

LIGHTING:

Per Light

Underwater marine	\$85.00
Overhead flood lights	50.00

TILE WORK

FLOORS:

Price
per Sq. Ft.

Tennessee marble tile 10-in.x10-in., on concrete base.....	\$1.00
Tennessee marble tile 6-in.x6-in., on concrete base.....	1.10
Cement tile 10-in.x10-in. on concrete base.....	.60
Hexagon white vitreous 3-in. on concrete base.....	1.00
Hexagon unglazed 1-in. on concrete base.....	.90
Terrazzo on concrete base.....	1.25
Ceramic mosaic	1.30
Rubber tile	1.25
Cork tile	1.25

WALLS:

Glazed wall tile, white 3-in.x6-in.....	1.10
Tennessee marble	1.30
Italian marble	2.10
Welsh quarry tile	1.00

DEPRECIATION STUDIES

Bureau of Internal Revenue—Treasury Department

Buildings

ASSET ITEMS	Masonry, brick, concrete, reinforced concrete, brick and steel, steel frame, steel and stucco (fireproof)		Masonry, slow-burning with or without steel frame		Masonry, with frame interior		Frame	
	Probable Useful Life	Depreciation rate	Probable Useful Life	Depreciation rate	Probable Useful Life	Depreciation rate	Probable Useful Life	Depreciation rate
	Years	Percent	Years	Percent	Years	Percent	Years	Percent
Apartments and flats, without elevators	40	2 1/2	35	2 6/7	30	3 1/3	25	4
Dwellings:								
1 family	50	2	50	2	50	2	33	3
2, 3, or 4 family	45	2 1/4	40	2 1/2	33	3	30	3 1/3
Factories	40	2 1/2	35	2 6/7	30	3 1/3	25	4
Foundries	50	2	40	2 1/2	28	3 1/2	25	4
Garages:								
Private	50	2	40	2 1/2	40	2 1/2	25	4
Public	50	2	35	2 6/7	30	3 1/3	20	5
Grain elevator buildings	50	2	40	2 1/2	33	3	25	4
Hotels and elevator apartments	35	2 6/7	30	3 1/3	25	4	22	4 1/2
Loft buildings	45	2 1/4	35	2 6/7	30	3 1/3	25	4
Mill-type buildings	40	2 1/2	35	2 6/7	30	3 1/3	20	5
Machine shops	40	2 1/2	33	3	28	3 1/2	25	4
Office buildings	40	2 1/2	35	2 6/7	30	3 1/3	25	4
Row houses	45	2 1/4	40	2 1/2	35	2 6/7	30	3 1/3
Stores	50	2	40	2 1/2	35	2 6/7	28	3 1/2
Stores, 1 or 2 stories of rooms or apartments	40	2 1/2	35	2 6/7	30	3 1/3	25	4
Theaters	33	3	25	4	22	4 1/2	20	5
Warehouses	50	2	50	2	45	2 1/4	35	2 6/7
Warehouses, skeleton pier, and special commodity warehouses, cold storage and packing	40	2 1/2	33	3	28	3 1/2	20	5

Chapter VII

DEPRECIATION AND OBSOLESCENCE

THERE IS often some confusion as to the meaning of obsolescence and depreciation as applied to buildings. Depreciation in its broad sense is the loss in value of an asset due to exhaustion, wear and tear. It is an actual loss which must be deducted as an expense of business. Obsolescence is defined in the Century Dictionary as a "going out of style." Obsolescence represents a falling off in value or usefulness of a thing from causes outside of the thing itself, as distinguished from the effects of wear or physical depreciation.

The effect of depreciation is shown by the increase in repairs and expenses but depreciation may be retarded by proper care of equipment, by painting, cleaning, etc.

The effect of obsolescence is shown by the usefulness and profitable life of the structure falling short of its possible physical existence. One of the most definite and exact measures of the effect of obsolescence on a building is the effect of age on its net income or the return on the capital represented by it.

DEPRECIATION in its narrow sense is physical.

OBSOLESCENCE is economic.

In analyzing the effects of depreciation and obsolescence on a particular structure it is necessary that we first consider these two elements separately and also consider the reason why the appraisal is being made. If the economic side of valuation is not to be considered, then obsolescence is given very little consideration. In the case of an appraisal for insurance purposes for example, the value derived must be for replacement purposes less depreciation, based on the normal life expectancy. In an appraisal made for financial purposes, the economic value is paramount, for we are then considering present money worth of the property. Here such factors as locality, suitability to occupancy, and its probable future usefulness play their parts.

The life expectancy of a structure is based on two elements, first the use to which the building is put, and second the class of material and workmanship used in the structure. Proper maintenance and repairs tend to increase the life of a building. This lessens depreciation; likewise, should a certain structure be given a life expectancy of say 35 years but should the building be revamped in its twentieth year, expectancy has been extended. This procedure may be more rightly termed modernization of the service elements. Such replacements or modernizing increase the life expectancy under depreciation and are in a direct ratio to the benefits derived from that modernization.

Boeckh Depreciation Tables—Buildings

	Expensive		Good		Average		Cheap	
	Life in Years	Depreciation Rate	Life in Years	Depreciation Rate	Life in Years	Depreciation Rate	Life in Years	Depreciation Rate
Residence:	Percent		Percent		Percent		Percent	
1 Family:								
Frame	50	2	40	2½	33	3	25	4
Masonry	75	1½	50	2	40	2½	33	3
2 to 4 Families:								
Frame	40	2½	36	2¾	33	3	28	3½
Masonry	45	2¼	40	2½	36	2¾	33	3
Apartments, and Flats, Small Retail Stores, Stores and Flats:								
Frame			33	3	28	3½	20	5
Masonry	40	2½	36	2¾	33	3	25	4
Fire-resistive	45	2¼	40	2½	36	2¾	28	3½
Large Apartment Buildings, Hotels, Department Stores, Hospitals:								
Masonry and wood..	40	2½	36	2¾	33	3	28	3½
Fire-resistive	45	2¼	40	2½	36	2¾	33	3
Fireproof	50	2	45	2¼	40	2½	36	2¾
Office Buildings, Theaters:								
Masonry and wood..	36	2¾	33	3	28	3½	20	5
Fire-resistive	40	2½	36	2¾	33	3	25	4
Fireproof	45	2¼	40	2½	36	2¾	33	3
Factories and Warehouses:								
Light traffic:								
Frame	36	2¾	33	3	28	3½	25	4
Steel	40	2½	36	2¾	33	3	28	3½
Brick joist	45	2¼	40	2½	36	2¾	33	3
Brick-mill	50	2	45	2¼	40	2½	36	2¾
Concrete	65	1½	50	2	45	2¼	40	2½
Heavy traffic:								
Frame	33	3	28	3½	25	4	20	5
Steel	36	2¾	33	3	28	3½	25	4
Brick Joist	40	2½	36	2¾	33	3	28	3½
Brick-mill	45	2¼	40	2½	36	2¾	33	3
Concrete	50	2	45	2¼	40	2½	36	2¾

NOTE:—Limit depreciation to 80 percent for economic purposes and 60 percent for insurance replacement purposes, then apply corrective factors.

CORRECTIVE FACTORS

Condition	Exterior	Interior
Excellent	—10%	—10%
Good	— 5%	— 5%
Normal for age	0	0
Fair only	+ 5%	+ 5%
Poor	+10%	+10%

Depreciation Tables—Building Equipment

	Probable Useful Life Years	Depreciation Rate Percent
Elevators:		
Freight	25	4
Passenger	20	5
Heating Systems:		
Boilers and furnaces.....	20	5
Radiators	25	4
Lighting Systems:		
Conduits, fittings, and wiring.....	25	4
Fixtures	15	6 2/3
Fire Equipment:		
Fire-alarm systems	25	4
Movable equipment	15	6 2/3
Sprinkler system	same as building	
Plumbing:		
Fixtures, toilet bowls, bath-tubs, lavatories, etc.	25	4
Pipes:		
Brass or copper	same as building	
Iron, cold-water	30	3 1/3
Iron, hot-water or steam.....	25	4
Sewer, cast-iron or vitrified.....	same as building	
Miscellaneous Facilities:		
Awnings	5	20
Incinerators	14	7

ELEMENTS OF DEPRECIATION

Explanation of Charts

Since different types of structures for different occupancies have different probable periods of usefulness, it has been found necessary first to subdivide depreciation charts into groups according to their occupancy, and again subdivide each chart into a classification according to the type of construction. It will be noted that the maximum depreciation allowed under the charts is 80 percent for economic purposes and 60 percent for insurance purposes.

Since maintenance plays such an important part in the life of a structure the factor of condition must be considered, both as to the exterior structure and the interior condition. We have therefore provided such corrective factors, either to extend or retard this life expectancy, based on conditions found at the time of the appraisal.

As an example, let us assume a good brick residence twenty years of age is in excellent condition. We find in the residential chart a depreciation rate of 40 percent; but since it is in excellent condition we find that the life expectancy is extended by 20 percent. By deducing this latter item from the depre-

ciation rate (20% of 40%) we get a current depreciation of 32 percent.

Depreciation for Insurance Purposes

In depreciating a building for insurance purposes a different situation prevails than in the case of an appraisal for economic purposes, since in the event of fire loss, the loss is settled on a replacement value as of the date and place of the loss.

The insurance policy reads that the loss will be settled "by a like kind and quality of material not to exceed its market value less depreciation at the time of the loss." Except in large losses or total losses, however, the question of depreciation is very seldom enforced by the adjuster; consequently in insurance appraisals depreciation can not be charged as heavily as it should be to represent the destroyed property's true money value.

Due to the foregoing condition it is recommended that the appraiser limit the maximum depreciation for age to 60 percent of the appraised value excepting where conditions are obviously bad. The correcting factors should then be applied.

Depreciation and Rentals

Physical depreciation can not be associated in any direct manner with the net or gross income of a property because the fact that a property does not earn its required income is a direct reflection of obsolescence and should be distinguished thus by the appraiser. The treatment for this condition is found in Income Analysis.

ANALYSIS OF OBSOLESCENCE

APARTMENT HOUSES of the best grade have many characteristics in common with *Hotels* because they are both places of residence. The most important causes of obsolescence in buildings of this character are as follows:

1. The construction of more modern buildings which causes direct competition with older buildings.
2. Better planned buildings with better and more artistic trim, finish, and decorations, and improved and more elaborate equipment for heating, ventilation, sanitation, refrigeration, and other things conducive to comfortable and luxurious living.
3. The shifting of a business center which encroaches on the high-class apartment center.
4. The shifting of the social center. This may not immediately cause a decrease of rentals as the incoming tenants of equal wealth but of lower social status will maintain high rentals until the most select social center again shifts.
5. A scandal among the occupants or the admission of an undesirable tenant or unsatisfactory maintenance, service, or management.

6. A change in environment which makes the locality undesirable to the best grade of occupants.

7. Improved transportation facilities which cause the building up of a competing residential section.

8. The development of better and more luxurious articles of equipment and type of rooms for which the existing apartment houses cannot be altered or remodeled.

9. Increase in land values and the impossibility of increasing the income by enlarging the building or increasing the rentals.

TENEMENTS, with regard to obsolescence, are anomalous. A tenement may become so depreciated that it is totally unattractive, unsanitary, and structurally unstable and still it may earn an income that is sufficient to prevent obsolescence. This is due to several things:

1. Generally built on low-priced ground and constructed as cheaply as possible.

2. There is not generally an increase, and sometimes there is a marked decrease in land values.

3. The tenants are usually persons of low earning power, and without financial means and they lack the ability to live in better quarters. In effect, they do not have the power of choice of habitation.

4. The tenants may be segregated locally because of race, nationality, or other social causes and do not have the power of choice of habitation.

5. The rapid increase in urban population, especially in industrial centers, causes a shortage of housing for workers with a resulting demand in excess of supply.

6. The lack of convenient and cheap transportation often holds tenant population near the places of employment.

Obsolescence of tenements is caused by:

1. Condemnation by police power as unsanitary or unsafe.

2. Unusual increase in land values because of shifting and expanding business centers.

3. Increase in land values because of extension of manufacturing or warehouse districts.

4. Increased earning power of the population with resulting demand for better housing.

5. The construction of better tenement buildings.

6. Cheap transportation to new and better built tenement districts.

COMMERCIAL BUILDINGS which are used entirely for retail business are subject to obsolescence from the following causes:

1. Shifting of the retail business center. This causes a loss of first-class patronage which makes it necessary for the occupant to move into the new business center or to change the character and grade of the business for a second-class patronage, or the use of the building for another kind of occupancy.

2. The construction of new, more attractive and better buildings by competitors. This can be partially offset by extensive remodeling, such as new store fronts, entrances, elevators, flooring, ventilating apparatus, and sanitary equipment.

3. Need for increased floor space. If the building is of sufficient strength or can be reinforced, more stories can be added. The cost of this reconstruction may be such that a better investment would result in demolishing and rebuilding larger and better.

Of these causes the shifting of the business center is the most certain to produce obsolescence. When this definitely happens it results in a possible different type occupancy such as wholesale business, warehousing, or light manufacturing which may require stronger construction for heavier floor loads, vibration caused by machinery or other reasons.

The profitable life of commercial buildings of this type is comparable to that of office buildings in respect to the shifting of business centers and the possibility of enlarging and remodeling them to satisfy the demands for more floor area, better display windows, and general attractiveness.

WAREHOUSES are not so subject to obsolescence when built of fire-resisting construction sufficiently strong to support heavy floor loads, equipped with suitable automatic sprinklers and adequate elevator equipment. Their usefulness does not depend on the location of the retail business center but rather on their location with respect to rail and water transportation.

INDUSTRIAL BUILDINGS are planned to house a particular manufacturing process which requires special features such as light, ventilation, spacing of columns, strength, elevator capacity, access to transportation facilities, sanitary equipment, and many other things.

Obsolescence of industrial buildings is caused by:

1. The shifting of the business center which so increases the land values that its use for manufacturing purposes is not profitable.
2. The need for additional floor space and the impossibility of acquiring more land or of increasing the height of the buildings at a cost sufficiently low to warrant an investment.
3. The need for increased strength to support new and heavier machinery or heavier products.
4. The abandonment of the premises for any reason and the necessity for adapting it to another occupancy.
5. The shifting of the operative population required for the specific manufacturing process.

PART 2

**REALTY APPRAISALS—OTHER
METHODS**

PART I
TREATY APPENDICES—OTHER
METHODS

Chapter VIII

WHAT IS AN APPRAISAL?

IN Chapters I and II, we defined rather briefly such general terms as "appraisal," "value," etc., and sketched in a general way the methods and uses of appraisals, paying particular attention to methods for finding Reproduction Costs, and Present Sound Values.

A more thorough discussion of these terms, and of other methods and purposes of appraisals will be valuable for the student, and for the general appraiser who wishes to have a thorough understanding of his job, in all its phases.

The answer to the question "What is an appraisal?" would depend a great deal upon whom you questioned. Webster's dictionary defines "appraise" thus: "To set a value on; to estimate the worth of, especially by persons appointed for the purpose."

There is no question about the word "estimate;" we can easily agree on its meaning. But when we come to "value," we have a more difficult question. Economists have argued at great length about its meaning, and without doubt will forever continue their debates.

MEANING OF VALUE

To commence this investigation of value we shall go again to the dictionary. We find this:

"Value—the aggregate properties of a thing by which it is rendered useful and desirable, or the degree of such properties or the sum of properties."

That definition says a great many things in a very few words and really deserves a lot of thought.

Take the phrase "aggregate properties." The aggregate of something, such as a house, would mean a composite of all the features about that house which would make people willing to live in it or buy it. Accordingly, the properties entering into value might be things so diverse as adequacy of foundation walls on one hand and on the other, the wall space for twin beds in a bed room.

In the definition of "value" we found the words "useful or desirable." Those two words don't always mean the same thing. You buy many things because they are useful and because you really need them. You buy other things simply because you desire them and not because they have any particular usefulness. Some houses are bought because they are so well built as to

guarantee long periods of usefulness; others are bought because of an attractive color scheme in decoration. Things so apparently unrelated as workmanship and color schemes may both be elements of value, and both may be appraised.

The elements of value which depend on usefulness may be called the utility elements, for utility is the power to satisfy human needs. The utility elements then would include features which contribute to necessities, such as shelter from heat, wind and cold.

Esthetic Values

The elements of value which depend on desire may be called esthetic values. Desire exists in the mind, and for this reason, value exists not in the concrete realities, but in our thoughts, through the desire to own or use things.

It is difficult to say whether the utility or the esthetic value elements are of greater importance. Certain it is that many appraisers are prone to underestimate the values which arise from desire, thus throwing their valuations out of balance and placing too much emphasis on the elements of plain usefulness—the utility elements.

A house may be constructed of the best materials and may embody the finest workmanship; may have the highest degree of utility, but if that house is grotesque in appearance, carries decorations that do not harmonize, is located in a disreputable neighborhood, then what is its value?

The Variable Dollar

Up to this point we have considered the foundations of value; the factors which make usefulness and which arouse desire in human minds. The science of economics employs another definition of value. This science, which deals with the production, distribution and consumption of wealth, states that value is the power to command commodities and service; that is, efficiency in exchange; that is, purchasing power. Apparently, then, we have two conceptions of value. But in reality we need have but one.

Were men to make direct exchange of commodities they produce it might be found that the farmer takes two bushels of wheat to the brick yard and goes back home with one hundred common bricks. But in our more advanced way of doing things the farmer sells the wheat for one dollar, then takes the dollar to the brick yard and exchanges it for one hundred common brick. The dollar has a value equivalent to two bushels of wheat, also a value equivalent to one hundred brick. The dollar is a medium of exchange; it translates the value attached to one commodity into the value attached to any other commodity.

The following table shows some equivalent values that become interchangeable through a dollar.

75 minutes of labor	}	\$1.00	}	100 common brick
2 bushels of wheat				$\frac{3}{4}$ bbl. Portland cement
1½ lbs. of wool				20 loaves bread
28 miles of railroad ride				2 lbs. candy
1-in. advertising space				5 gal. of gasoline
30 seconds of broadcasting				50 newspapers
\$100.00 used for two months				20 lbs. of crude rubber

This list illustrates one function of the dollar; a medium of exchange. It also illustrates for one particular time the purchasing power of the dollar. This purchasing power is the exchange value of the dollar as value is defined in the science of economics.

Measured in the things it will buy, the dollar is not the same from one week to the next, nor is it necessarily the same in one town and in another but little distant. To get our ideas straight we must think of the usefulness of commodities as the things which remain stationary; and of the value of the dollar as the fluctuating unit.

In spite of the obvious defects in our system of using a dollar that shifts around so wildly in purchasing power, the dollar still has some worthwhile advantages, and there is at least one purpose for which it is eminently well fitted. The dollar is a first-class "common denominator" for values; it allows us to reduce all values to a single unit (the dollar) and thus to compare values with one another.

Other units of measurement are stationary in relation to their given quantities, but when you say "a dollar's worth of something" your statement has no definite meaning; you must say what dollar you are talking about: whether it's a 1928 Chicago dollar or whether it's a 1933 Cincinnati dollar or some other time and place kind of a dollar.

Having looked into the real meaning of the word "value" and having found also that the dollar is a most unstable unit of measure, we may formulate a new definition for the word "appraise"—to translate values into dollars with due regard to time and place.

Real Property Value

To undertake an analysis of value in the abstract would be to begin a quest that never would end, so we shall sift out just one class of value—the value of real property. Real property is that which most people call Real Estate.

In the work of appraisal it becomes necessary to distinguish between the meaning of property in general and a property. All the land, buildings, fences, trees, lakes, etc., you find in the city or town in which you live are property. But the house and lot you own or reside in is a property. Anything capable of separate ownership is a property, and anything capable of separate and independent use is a property.

Let us get away from legal and technical phraseology and actually consider a few of the elements of value as it would pertain to a residence and the land upon which it might be erected.

Various Components

As a property let us consider the various components of value that enter into the appraisal of even a residence. The composite list would then appear this way.

A—Physical Value:

1. Cost of replacement at today's prices.
(today's dollar)
2. Depreciation allowance based on present physical condition.
3. Size of land, size of buildings,—the items of "quantity."
4. Quality of materials; quality of workmanship.
5. Completeness of interior equipment and accessories.
6. Up-to-dateness (Possible obsolescence; economic condition).

B—Earning Value:

1. Net income based on rental or rental value; capitalization of income.
2. Speculation: possible increase or decrease in value.
3. Goodwill value of established location.

C—Effect of Market; Supply and Demand:

1. Possibility of buying this place, buying a similar place, or of building a similar place. Balancing the advantages of cost.
2. Enjoyment in occupancy; advantage of good arrangement and design.
3. Harmony with surrounding improvements.
4. Any known demand for comparable properties.
5. Any evident scarcity of similar properties.

D—Values Existing in Mind of Buyer (our mental values).

1. General attractiveness; beauty of land and building.
2. Enjoyment in occupancy; advantages of good arrangement and design.
3. Harmony with surrounding improvements.
4. Peculiarities in design, advantage or detriment.
5. Sentiment in buyer; associations.
6. Social advantages due to neighborhood.

E—Suitability of the improvement to its land and location.

1. Whether buildings are too large and costly, or are too small and cheap for the land and location.
2. Whether land might be used for something more profitable.
3. Apparent trend of neighborhood development; future possibilities.
4. Interior and exterior designs and fittings.
5. Extent to which district is developed; possibility of change.

This list gives a good cross section of residential valuation as carried on by the average appraiser. However, the point is to show that a great many different things can and do enter into the value of property. The twenty-five factors which mean so much in valuation practice serve still another purpose; they bring out most clearly the difference between appraisal engineering and the professions and trades which deal with fixed realities. This fundamental difference may be stated thus: appraisal contemplates a finished property; it must recognize the worth of the entire picture and must consider the separate items only as they add to or subtract from the value of the whole. Appraisal, then, is different from the building professions and trades which deal with things before they are made or while they are being made.

Upon devoting a little thought to each of the items in the list it becomes evident that nearly all of them are subject to exact determination. High grade appraisal is only possible when supported by provable factors of value rather than an unsupported opinion, which all too often is mere guesswork.

PURPOSE OF AN APPRAISAL

The purpose of an appraisal of a property is to provide interested parties with an opinion of the value of that property, as of a given time and under certain limiting conditions, based on determination and study of existing conditions, trends and influences; for the determination of the security for a loan; the purchase or sale price; the amount of insurance to be carried or paid in case of loss, for taxation, condemnation, accounting and other purposes.

In the case of a property having an investment value, the purpose of an appraisal is also to provide an opinion of the probable amount, variation and duration of future gross and net earnings, and probable effect of future depreciation and obsolescence on the value of the improvements.

The appraiser should never give a hasty or unconsidered opinion as to value, earning power, or cost. Both preliminary

reports and appraisals should be made only after having ascertained and weighed all of the pertinent facts.

Over and Under Appraisals

There is no virtue in either over or under appraisals. An over-appraisal invites over-capitalization, or may damage a purchaser's interests; an under-appraisal prevents the determination of the factor of safety in financing, may injure a borrower in financing or refinancing, may prejudice prospective purchasers, lessees, or tenants, and may effect negotiations for mergers or the distribution of assets under court order.

Either an over or under appraisal may damage parties at interest in taxation, condemnation, or insurance cases.

Either an over or an under appraisal prevents agreement between independently made appraisals, thus discrediting them all.

Security for a Loan

In appraising property, to determine the security for a loan, the appraiser should place a value on all of the property offered as security. The appraiser may assume that the title to the property is clear of encumbrance, and that the indenture of mortgage will cover the designated property. He may also assume that adequate insurance will be carried on the perishable assets.

It is the appraiser's duty to discover and clearly state the *kind* of value which stands as security for the loan. In many cases the value of the property is a market value only. In other cases there is both an investment value and a market value. In the case of large properties, not infrequently there is an investment value only. In cases where the property securing a loan has a market value or an investment value, the lender, under foreclosure, obtains this value for himself.

Under some circumstances, properties which have only a service value are offered as security for a loan. Under foreclosure this service value vanishes and there remains only a liquidation market value. The pledging of such property serves merely as a hostage for the payment of the debt.

In practice, unsound loans have frequently been made on market value when the security really rested on investment value; and unsound loans have been made on service value (depreciated reproduction cost) when the security really rested on market or investment value.

It is clearly the appraiser's duty, therefore, to determine what kind of value stands as security for the loan, and to report that value and that value only.

Economic Soundness of Investment Construction Projects

In appraising an investment construction project, the appraiser should render an opinion, in his appraisal report, upon

the economic soundness of the project. Such opinion should be based upon the relation between estimated cost and estimated earning power. The total net cost of a construction project is estimated by adding the actual cost of the land, or leasehold, (when known to the appraiser, otherwise the market value) to the estimated cost of construction, financing, and carrying charges, and subtracting any net operating revenue there may be during the construction period. This figure is the estimated net cost to completion. Should this cost exceed the investment value at *completion* the project is economically unsound. This difference between net cost and investment value, at completion, is the "improved value."

The "investment value at completion" is the present worth of the earning expectancy from date of completion to normal occupancy.

Use of Appraisal

The appraiser must fully understand the purpose for which the valuation is required. To the man in the street it may appear that the valuation of a certain property should be the same under all circumstances, and that if the appraiser gives different figures for different purposes, this amounts to little short of juggling.

It only needs stating, however, to realize that the appraiser is in a very different position if he is advising as to what sum can safely be lent upon a mortgage in a property, from that when he is advising the owner as to what amount he may expect to get for the property if sold in the open market.

In the first case, the appraiser has to bear in mind that foreclosure and subsequent sale may ensue at a very inopportune moment, probably with the accompaniment of accrued interest. In the latter case, however, the owner may possibly take his time and wait until he gets a good offer from a person who can make full use of the property.

As another example, suppose property is being acquired by a body having the right of eminent domain, and empowered to take property by condemnation. In such a case the appraiser is usually required to act as an expert witness in the condemnation proceedings. Here the seller is an unwilling seller, and it is quite reasonable that he should not only be insured against all possible loss but that he should also obtain some compensation for any inconvenience to which he may be put and for any prospective rise in value. Thus the appraiser is quite justified in taking a somewhat liberal view of the value of the property in these circumstances.

Chapter IX

VALUATION BASED ON INCOME

IN Chapter II, we noted that property valuation employed three general methods for determining values:

1. Valuation based on Reproduction Costs.
2. Valuation based on Income derived from the property.
3. Valuation based on comparison with similar properties.

The first method was discussed in some detail in that and succeeding chapters. We shall here discuss the second method.

Value based on income is an important method of valuation, but it rarely is used for arriving at the value of a building without the land, being applied rather to valuation of an entire property, or, indirectly, to find land value.

Many appraisers express their theory of valuation by saying, "A property is worth what it will earn." If you own a property from which you get a net income of \$600.00 a year after all expenses are paid, and if your money is worth 6 percent, then you may say that your property is worth \$10,000.00. It is worth \$10,000.00 because this amount loaned out at 6 percent interest will earn \$600.00 a year, the same amount your property earns.

Nothing is simpler in theory than the principle of "capitalization of income" for arriving at a valuation. But nothing is more difficult and intricate than the correct application of this principle.

Valuation according to income is feasible with any and all properties which produce income and, by extension, with any properties which might produce income. This is practically the same as saying that valuation by income is applicable to properties which are not occupied or used by their owner, but which are rented or leased to others.

Income property includes apartments, office buildings, rented houses and many small stores, small factories, hotels and similar places. When the income method of valuation is applied to other properties it becomes necessary to *assume* an income such as might be realized.

Because of the complexity of the income methods of appraisal, many attempts have been made to reduce them to rough and ready rules which are easy to apply. Quite possibly you have heard some one say, "If a house rents for \$100 a month the property is worth \$10,000.00." That man has adopted the rule that residential property is worth 100 times its monthly rental. Others may use 80, or 90 or some other figure as their multiplier.

A rule such as this is simple, but if applied generally and

without careful investigation in each case, it is just another guess and would give a correct result only by merest accident.

Interest rates are generally low for money invested in properties used for stable and permanent enterprises, rising gradually through the various uses of property until the rate reaches maximum figures where the occupation is temporary and the uses questionable. Interest rates vary also with the locality, being low in the large cities and higher in the smaller places; low in older parts of the country and higher in the more newly developed regions.

Possibly an apartment property is placed under poor management. Operating expenses go up, the net income goes down, and the valuation goes down with the income. It may be correct to value a poorly managed property at a lower figure than that for a well managed property, but such a value is based on the human element as well as on the physical property.

Value based on actual income is changed by every change in that income, no matter what the cause for change. Since the possible changes are almost without number, so the possible valuations must be also without number.

Hypothetical Income

If we are able to make valuations based on income and are to have those valuations even approximate the true worth of the properties, we must take for our base the income which the property is capable of earning and must ignore what it actually is earning unless the two amounts happen to be the same.

The process of arriving at this hypothetical income is no job for a school boy. It might almost be called a problem in relativity; at least we shall have to consider the relation of numerous factors one to another and each to all the others. For one thing we must determine the use for which the land is best fitted and decide how nearly the present improvement approaches this ideal. We must also do a little prognosticating about what may happen to the income in the near and distant future. It may be necessary to estimate the remaining life of the present improvement, to figure what it will cost to remove it from the land, what it will cost to erect the optimum future improvement, and what will be the gross income, the expenses and the net income before, during and after the change.

Valuation on income, to be truly accurate, requires intricate computations, careful forecasting, exact knowledge of trends, and much statistical data. This process seldom is warranted except for properties of great value located in established districts where conditions have attained stability.

Chapter X

REALTY INCOME ANALYSIS

NET RENTALS from real estate are in the same category as the income received from any other investment, but unlike most other investments there are two variable factors, first in the expenses of operation and secondly, the ability of the property to remain productive. Both these items should be given weight in a valuation. The gross income may be calculated, based on the ability of the particular type of tenant to pay. In residential and apartment locations, this factor is varied, not necessarily by the tenants themselves but from the demand in the particular location for space and from competitive building and more units in the same location.

In the retail trade location, we not only have the same foregoing factors, but to this must be added the ability of the merchant to sell a certain fixed ratio of merchandise to the amount of rent he is paying. The following is a table of percentage of rent to gross sales:

Department stores	3-4%	Automobile accessories	8-10%
5-10-15 and 5-\$1 stores.....	5-7%	Garage storage	50%
Drugs, ordinary	8-10%	Automobile agencies	1½-2%
Drugs, cut rate	5-8%	Bakeries	4-6%
Furniture	5-7%	Barber shops	10-15%
Groceries, ordinary	7-8%	Beauty shops, merchandise.....	10-15%
Groceries, chain	2½-4%	Books, new	10%
Haberdashery	10%	Books, second hand.....	15%
Hardware	9½%	Cigars and tobacco.....	6-8%
Men's clothing	6-8%	Electrical goods	10%
Men's hats	6-8%	Florists shops	10-15%
Millinery	10-12%	Furs	10%
Restaurants	8-10%	Hosiery and knit goods.....	10%
Cafeterias	5-6%	Jewelry	8-10%
Candy	8-10%	Hotels	9%
Women's furnishings	6-8%	Theaters	9%
Art shops	10-12%	Trunks	9%

DETERMINING NET INCOME

Gross Income to Value

For rapid estimating the general value of a piece of property it is sometimes useful to know approximately what is the ratio of total income to total value. The following table is given as a guide, but is not to be taken as conclusive evidence of value. The figures represent only past experience for the general types of structures.

Residences	9½	times	gross	income
Tenements, water and hall lights only furnished	9	"	"	"
Flats, 2 and 4 family, no janitor service or head	8½	"	"	"
Apartments, small, heat furnished but no pay to janitor other than apartment...	7	"	"	"
Apartments, no elevator service but janitor, head hall lights, and refrigeration furnished	6½	"	"	"
Apartments, elevator (automatic) and some service as above.....	5½	"	"	"
Apartments, elaborate service.....	5	"	"	"
Stores and apartments, heat and water, no pay to janitor.....	7-7½	"	"	"
Stores and apartments, pay to janitor.....	6½-7	"	"	"
Office building, depending on amount of service	3½-4½	"	"	"

Determining Income

Determining the gross income derived from a piece of property is comparatively simple so long as the owners or operators maintain any sort of records or bookkeeping methods. There are, however, certain factors that should be clearly ascertained before a definite statement of the conditions is made by the appraiser. In certain sections of the country it is a common practice under short term leases, especially on apartments, to take a twelve months lease giving the thirteenth month as free rent. This is not always shown on the owners' schedule. Under types of leases, especially on store property and mercantile establishments, the tenant pays certain of the fixed expenses; a very common practice is that the tenant will make all inside repairs and the landlord the outside. Another condition quite often found is where the tenant sub-leases a portion of his leasehold and, in the setup of rental values given by the owner, both items appear.

Operating Costs do not show a definite variation in proportion to the height of a building; but when both operating costs and income are plotted on the square foot basis of rentable area some interesting results may be noted. As income increases, operating cost may be expected to increase but not in proportion. As the income increases the percentage of operating cost is lowered.

Rent per sq. ft.	\$1.00 to \$1.25	38%	of	gross	income
" " " "	1.26 to 1.75	37%	"	"	"
" " " "	1.75 to 2.25	36%	"	"	"
" " " "	2.26 to 2.75	35%	"	"	"
" " " "	2.76 to 3.25	34%	"	"	"
" " " "	3.25 to 3.50	33%	"	"	"
" " " "	3.51 and over	32%	"	"	"

The foregoing table was made up from averaging a large number of well managed buildings. It does not take into consideration allowance for vacancies or depreciation on the investment but represents an actual operating overhead.

With office building expenses the situation is somewhat different, due to the loss of net rentable area caused by the increased elevator requirements and other mechanical equipment. Clark and Kingston in their book, "The Skyscraper," give an expense range against gross income of 22½ percent on the eight story building to 24 percent on the 75 story building, exclusive of taxation. Taxation will vary from 15 percent to 25 percent of the gross income with no relation to floor heights.

Determining Expenses

TAXES: The tax expenses on a piece of property are a matter of public record and should never be estimated; however, in new properties this information is not available and the inspector must estimate from the local tax rate on the percentage of value being taxed in the locality he has under consideration by a comparison of similar properties.

The question of taxation is a very serious matter and can become quite a detriment to a piece of property if excessive. A proper proportion of taxation to income should be around 5 to 20 percent of the gross income, depending on the use to which the property is put.

INSURANCE: This item is a matter of public record. The rates on a particular piece of property can readily be determined from any insurance agency in the locality, so there need not be any guess work as to the amount of this item.

In certain type properties it is a common practice to carry fire insurance in an amount equal to 80 or 90 percent of the insurable value. This allows for a reduction in rate by the use of the coinsurance clause. In addition to the fire insurance, it is the practice to carry about 50 percent of the value in wind-storm insurance.

In the larger types of properties it is sometimes necessary to carry public liability insurance, which rate is based on the square feet of floor area and street frontage. Any insurance agent will give the inspector this information.

In buildings with mechanical equipment, allowance has also to be made for elevator insurance and boiler insurance.

WATER, LIGHT, GAS AND HEAT: Where no direct information is available the following is offered as a guide. The costs are based on the experience of a number of properties

over a period of time, the estimate being made against the actual return on the property.

Small apartment buildings—5 to 10 percent of gross income, the high rate being on the cheap rents.

Large apartment buildings—2 to 4 percent of gross income, the high rate being on the cheap rents.

Under the item of heat, there must be considered not only cost of fuel, but that of a licensed fireman in many localities, plus haulage for ashes and general boiler repairs.

WAGES: Under this item will be found that of the janitor and other maintenance help. Larger types of properties may have telephone operators, elevator boys and numerous other items, while in the smaller properties it is very often the practice to furnish the janitor his apartment only and pay him extra when miscellaneous work occurs around the property.

This item should be very readily determined by the inspector by both observation and inquiry. It should be noted that as the rate increases for rentable floor area, the cost of service increases in like manner. It will run from $2\frac{1}{2}$ to 6 percent in the cheap rental buildings and from 7 to 12% in the higher rental buildings.

In connection with this item, there is also the question of house supplies. These items are small but over a period of time might aggregate a considerable figure. They would include such things as cleaning materials, light bulbs and other small miscellaneous items.

REPAIRS AND MAINTENANCE: The intent of this item is to cover redecoration and general miscellaneous repairs. Experience over a period of time shows that the only factor that should be taken into consideration is that the operator's books for one year would not generally show the true condition. The higher the type of property, the greater this item becomes. Low rental buildings, 6 to 8 percent of gross income; high rental buildings, 2 to 4 percent of gross income.

Modernization costs should not be classed under this heading, but should be given consideration under depreciation and obsolescence.

SUNDRIES: In the management and operation of all income properties there is the question of rent collections, general supervision of the administration, and miscellaneous advertising. This item would vary, from the small owner who attends to everything himself, to the large owner where a special staff is maintained for this type of work. It is the practice in certain types of apartment property to have a resident manager. In

some cases this resident manager receives only a rent-free apartment for his services and this may vary in other classes to where a good sized salary is paid for such service. The inspector also may find certain types of property under the supervision of a management department of a real estate office or trust company, where a fee is paid based on a percentage of gross rentals which may vary anywhere from 4 to 8 percent of the gross rents received.

VALUE BY CAPITALIZATION

To evaluate by income alone, is like fixing farm land values on the current price of a certain grain. Behind income there are certain fundamental causes why a certain piece of property does or does not produce a certain income expectancy or why it produces more income than a like piece in a different location. Income is affected by so many things that to rely on income alone will by no means give the proper set-up. Lowering of rent through competitive building or vacancy through the distress of times changes the capitalization set-up completely. As the fundamental causes are different, so should the final answer be different.

The net earning capacity rather than the actual net earning of a property should be considered in fixing its valuation, the earning capacity to be determined as it would be under a reasonable, prudent, and economical management. The gross receipts to be considered for the purpose are not necessarily the receipts which were in fact received, but such receipts as would be received under a reasonably normal condition. Likewise, the expenses to be deducted in order to determine the net income are not necessarily the expenses which were in fact incurred, but such expenses as would be incurred under a reasonably economical and prudent management.

The rate of capitalization for the net income from a given property is based on the average interest rate on all investments of like hazard, and upon the class and character of the property in question. Just as the percent income varies with various grades of securities, so the income required by purchasers varies for different classes of property. This may be as low as 3 percent for the high-class, downtown business property in the larger city, to 5 or 6 percent for secondary property in the same cities and for first-class property in smaller cities. In general, the larger the city and the higher the class of property, the greater the stability of rents and the ease of convertibility, and the lower the rate of capitalization.

Examples of Net Expectancy

Marketable Securities	Comparable Realty Holdings
U. S. Government bonds	2¾ to 3% Long term leaseholds with large reverting security. (5 to 1 security.)
State and municipal bonds, highest grade	3 to 3½% Long term leaseholds, large reverting security. (4 to 1 security.)
State and municipal bonds, medium grade	3½ to 4% Long term leaseholds, 3 to 1 security reversion. Property in path of city growth; congested areas, large cities.
State and municipal bonds, ordinary grade (5%)	4% Long term leaseholds, 2 to 1 security reversion.
Industrial bonds, highest grade	to 5% Property in path of city growth; congested area; smaller city but on best corners.
State and municipal bonds, low grades (5½ to 6%)	5% High-grade properties in congested area of larger cities. Properties with long-term leases by responsible clients. Best located business properties.
Industrial bonds, medium grade	to 6%
Preferred stocks, highest grade.	
Stocks in business assured of constant earning	6% to 8% Modern office building centrally located. Well located, high-class apartment property.
Stocks in business usually in good demand	7% to 10% Older office buildings, well located. High-grade apartment buildings. Residences with leases, well located retail suburban.
Stocks in business protected by tariff	9% to 12% Suburban business property. Medium grade apartments. Tenements, good factory districts. Residences without leases.
Business, subject to seasonal earnings, crop damage, etc.	12% or over Outlying properties. Cheaply constructed flats. Tenements, cheap grade.

Rules for Capitalization of Income

1. Determine hypothetical income based on present-day rentals.

2. Determine expenses based on present-day costs and requirements.

Note: Difference is expected net annual income.

3. Make due allowance for normal vacancy. Average 15 percent of gross income.

4. Deduct present annual depreciation requirements based on reproduction cost analysis.

Note: Capitalize the balance at a rate of interest that is suitable to the character of property in question.

5. Determine actual income received under present conditions, investigate whether income loss is due to competitive property or natural vacancy due to present economic conditions.

Note: If loss of income is due to competitive buildings, the property is classed as over-improvement. If loss of income is caused by present economic conditions, there is a probability that it may be expected to return to normalcy in the near future and the property is not over-improved.

Economic Value

6. In the event of *over-improvement*, determine the percentage differential between hypothetical Net Income Expectancy and Reproduction less Depreciation, and deduct this percentage from the building value as a factor obsolescence due to over-improvement.

Example: Gross value as determined.....\$100,000.00
 Capitalization by net income expectancy.... 50,000.00
 $50,000/100,000=50\%$

Reduce building value by 50 percent on account of over-improvement. The resultant value will be known as the **ECONOMIC VALUE**.

Note 1. This method allows for total elimination of the improvement as and when the expenses meet or equal the maximum income expectancy. As land is figured separately, there is no reason to take it into consideration under obsolescence. Land has value and it only requires that the ground be rehabilitated with the right kind of an improvement to give it a normal expectancy.

Note 2. In capitalization of the income expectancy, due consideration must be given the usual probable normal vacancy and annual depreciation.

Investment Value

7. On over-improved properties as enumerated in Item 6, when considering a probable *Sales Value*, it must be realized that market conditions may be such that there is no such thing as a willing buyer and a willing seller, whose minds have met at

a single point where a natural fair price is created. The price point of fairness lays somewhere between a price in which all competitive building is eliminated, and the price where an investor might take the risk as a speculation, to hold the property for a return to normalcy. From the speculator's angle, the property should be treated by capitalization of the actual net income of the property and obtaining the percentage differential between the Reproduction Costs less Depreciation, and the capitalized value on present return.

Example: Gross value as determined.....\$100,000.00
 Capitalization on present net income..... 25,000.00
 $25,000/100,000=25\%$

Economic worth is 25 percent of replacement cost, therefore, 100 less 25 equals 75 percent deduction to be made against building as an obsolescence factor. The resultant value will be known as the INVESTMENT VALUE.

8. In capitalizing properties not classed as over-improved, any differential that might be taken as an obsolescence factor should be reduced one-half.

Normal Condition

Reproduction costs:

Land\$180,000.00

Building 420,000.00

Total\$600,000.00

Example: Gross income expectancy, 100 % occupied..\$100,000.00
 Expenses, operations.....\$32,500.00
 Vacancy, 15 % contingency 15,000.00
 Depreciation $2\frac{1}{2}\%$ on
 \$420,000.00 10,500.00
 58,000.00

Net expected income.....\$ 42,000.00

Capitalization \$42,000.00

@ 7% 600,000.00

Investment value equals..... 600,000.00

Reduced Income Condition

Gross actual income\$ 70,000.00

Expenses, operation.....\$32,500.00

Depreciation, $2\frac{1}{2}\%$ on

\$420,000 10,500.00

\$ 43,000.00

Actual net income.....\$ 27,000.00

Reproduction costs\$600,000.00

Capitalization \$27,000.00

@ 7% 385,695.00

Differential equals 64.28%

100—64.28=35.72%, reduced $\frac{1}{2}$ =17.86%

Economic obsolescence factor 17.86 percent of building, drop due to loss of income.

New set-up of property with balance between reproduction and capitalization:

Land\$180,000.00

Building\$420,000.00

Obsolescence, @ 17.86 %..... 75,012.00

\$344,988.00

Investment value\$524,988.00

Chapter XI

VALUATION BY COMPARISON

THE SYSTEM which seems to have been used in a greater number of cases than any other single method is the one which may be called the "Comparison" process, the third method mentioned in our list.

This method is particularly applicable to valuing unimproved land, land which carries no buildings, although it may be used for improved properties provided you can get hold of enough of the right kind of data. This reservation, about the right kind of data is made because there is little use in comparing lots of entirely dissimilar types, or in comparing apartment houses with single family residences.

If you are able to learn about a number of recent sales of similar properties you can compare those properties with the one you are valuing, making whatever allowances your judgment dictates for differences between the property you are handling and each of the others.

If it is impossible to obtain reliable information on a reasonable number of recent sales, you may resort to comparison with sales made during a long time period of time. Then you must make two adjustments; one for the long time trend of neighborhood values, another for the varying purchasing power of the dollar.

Say you dig up information on fifteen sales of vacant lots made during a period of twenty years. The first thing to do is to change the actual sales prices of each of those other years into today's equivalent dollars. In the following list we have put down fifteen sales, each with its date, its actual amount, the dollar's ability at that time compared with "today's" ability, and finally "today's" equivalent price. Bear in mind that we are here considering land value and not values of improved property.

Sale No.	Date	Actual Price	Dollar Value at Sale Date	Today's Dollar Value	Today's Equivalent Price
1	1913	\$1,325	160.0	100.0	\$2,120
2	1915	1,350	158.3	100.0	2,140
3	1915	1,250	158.3	100.0	1,980
4	1917	1,750	112.0	100.0	1,960
5	1918	2,100	93.5	100.0	1,965
6	1920	3,050	59.7	100.0	1,820
7	1921	2,325	78.0	100.0	1,813
8	1923	2,375	75.1	100.0	1,785
9	1925	2,400	76.9	100.0	1,845
10	1926	2,500	78.8	100.0	1,970
11	1928	2,425	78.8	100.0	1,910
12	1930	2,650	81.2	100.0	2,150
13	1930	2,775	81.2	100.0	2,255
14	1931	2,375	93.5	100.0	2,220
15	1932	2,400	100.0	100.0	2,400

If we look only at the actual sale prices it appears that values in this locality reached their peak in 1920 and have shown a drop since then, the drop becoming slightly worse since 1930. But if we take into account the fact that the 1913 dollar was worth 160.0 and the 1920 dollar only 59.7 the picture looks different. The last column shows all the prices translated into today's dollars. It becomes plain that there was a gradual fall in value up to and including 1923. Since that time there has been a practically steady rise, with the very highest values coming in the later years.

A similar comparison process may be applied to buildings. The use of this method for buildings runs into exactly the same difficulties that were found with valuations based on square foot and cubic foot factors. Buildings refuse to be treated like eggs or other things sold by the dozen—unless they are buildings such as you find in long rows, the only difference being a green roof on every third structure.

Some People Get Fooled

Any use of the comparison process in arriving at values calls for careful and searching work on the part of the appraiser. He must make certain that he is figuring with bona fide sales. Nearly everyone knows that "asking prices" are not reliable,

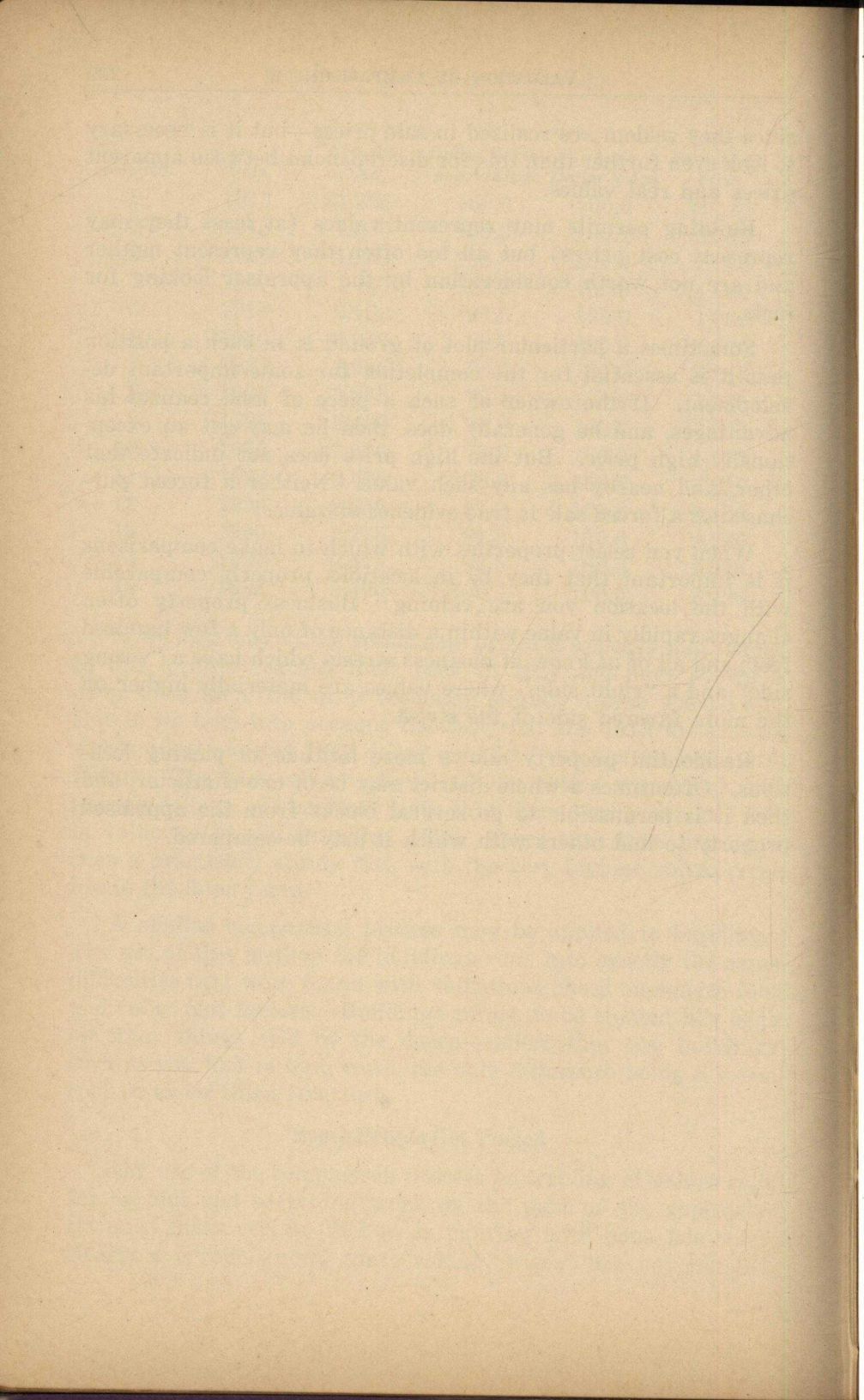
since they seldom are realized in sale prices—but it is necessary to look even further than this for discrepancies between apparent prices and real values.

Building permits may represent values (at least they may represent cost prices) but all too often they represent neither and are not worth consideration by the appraiser looking for facts.

Sometimes a particular plot of ground is in such a position that it is essential for the completion for some important development. If the owner of such a piece of land realizes his advantages, and he generally does, then he may get an exceptionally high price. But the high price does not indicate that other land nearby has any such value. Neither a forced purchase nor a forced sale is true evidence of value.

When you select properties with which to make comparisons it is important that they be in locations properly comparable with the location you are valuing. Business property often changes rapidly in value within a distance of only a few hundred feet; and all of us know of business streets which have a “wrong side” and a “right side,” where values are materially higher on the more favored side of the street.

Residential property allows more latitude in picking locations. Oftentimes a whole district may be of one character, and then it is permissible to go several blocks from the appraised property to find others with which it may be compared.



PART 3

LAND VALUATION

17

PART I

LAND VALUATION

Chapter XII

LAND VALUATION

IN THE classification of land and its probable value there are only four general fundamental uses to which land may be put, namely, business, industrial, residential, and farm; but these uses are widely separated as to the characteristics under which they derive their values.

Business land value is based on the buying power of the public and on the land's location as to this buying power.

Industrial land value is based on the questions of utility, labor market, railroads and power.

Residential land value is a question of habitation and the desirability that habitation continue in a specific locality.

Farm land value is a question of the ability of the soil to produce a crop, and of the marketability of that crop.

In any land value, its location and underlying advantages are the factors that gauge the valuation and, likewise, the same factors gauge the improvements that may be economically created on the land. Although it may be said that the real value of land is the price at which it will sell on the open market, such sales must be the result of a willing buyer and a willing seller. Therefore in establishing a value which does not involve a recent sale, an economic value must be the consideration and this value must be arrived at through the breakdown of the factors that create land values.

To establish an economic valuation we enquire into the fundamental theories relating to the creation of land values. In determining the capital value of all city lands the character and cost of government must be considered. In urban communities, especially in residential sections, the character of the population of the neighborhood, local improvements, social advantages, educational facilities, and similar factors all affect the value. There must be streets, sewers, running water, gas, electricity and means of transportation to create these values, as land without these improvements has practically no value. Not the least of the factors affecting land values is the purchasing power of the dollar as it is related to basic cost in the locality under consideration. A change in the quantity of what the dollar will purchase changes cost, changes income, changes operating expense, and in fact changes every fundamental factor behind the property and therefore changes value.

CLASSIFICATION OF LAND

Business Property

Determining the value of business sites and frontage on a business district of a city or town revolves around the presence

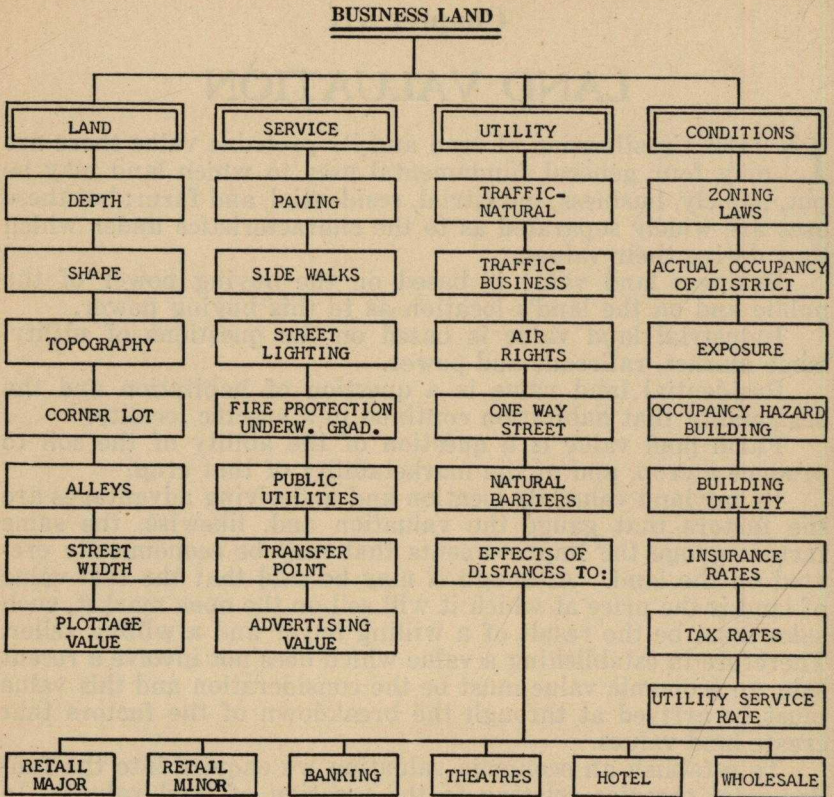


Chart of Factors Affecting Business Land Values

of people. People create buying power; buying power allows a merchant to compete for location in the payment of rents, and the ability of the merchant to pay certain fixed rentals for certain locations creates an investment value to the land.

Districts are affected by many conditions such as buying power of the traffic, transportation facilities, transfer points, topographic conditions, artificial barriers such as parks, public buildings, railroad lines. The effect of light and shade and other minor influences is also noticeable on certain streets in many cities.

Sales value may be defined as a sum a willing seller can obtain in a reasonable time under ordinary terms and conditions. Therefore, sales price may be considered indicative of value but not as conclusive evidence. Circumstances always govern in the sale and at best indicate only the opinions of two individuals whose minds have met at a certain point.

Price obtained for property sold under stress of circumstances; forced on the market through the necessity of the owner

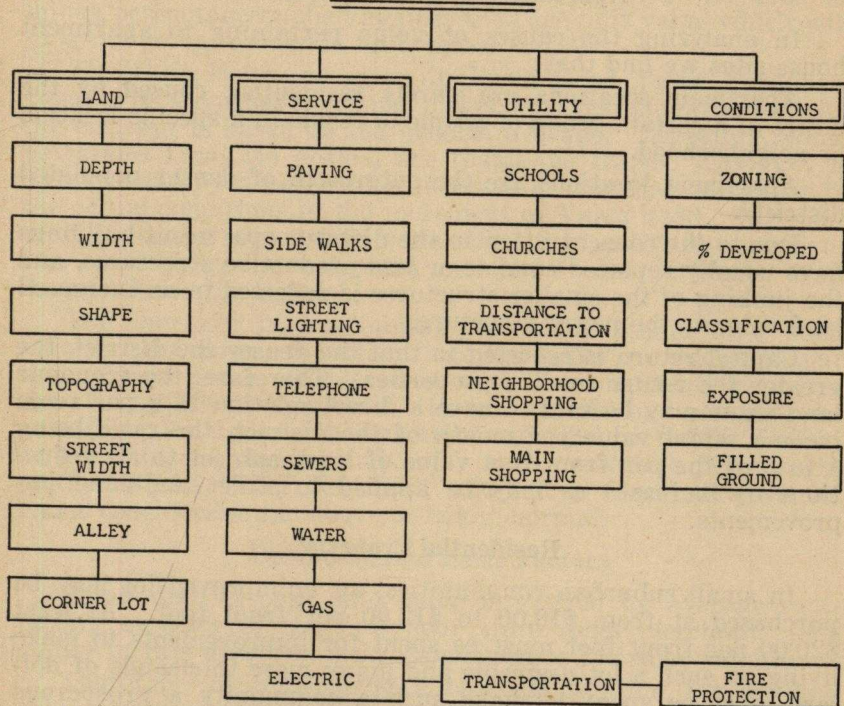
RESIDENTIAL LAND

Chart of Factors Affecting Residential Land Values

to realize quickly, or in foreclosure of mortgages, is not indicative of true value. Price paid to obtain the last parcel in an assembly of a block of land in a city for a building or a location desired because of some peculiar need or whim of some buyer is only evidence of value and is not necessarily to be considered as a criterion in determination of the value of adjoining parcels.

The aggregate price paid for all the parcels making up the assembly of a block should be good evidence of the value of the whole. However, this value of the whole when all its parts are reassembled would be generally greater than the price paid for the various parcels. This is an additional factor and can be given separate judgment as a plottage value.

Sale of real estate, particularly in cities and towns during the activity of a real estate "boom," must be carefully examined and scrutinized before being used as evidence of value. In nearly all instances such sales prices reflect the optimism of the salesman, anticipations of the buyer and the rosy picture of the expanding development of the seller. These may not be realized on in the succeeding years and an appraisal for any purpose must avoid basing values too much on such records.

Apartment House Land Values

In analyzing the causes of value pertaining to apartment house sites we find that:

Apartment locations are purely residential, caused by the desire of a certain group of people to reside in a specific location or neighborhood.

Apartment locations are the outgrowth of denser populated districts.

Due to the concentration in the district, apartment buildings have usually replaced smaller or less productive structures, and the junking of the smaller structures is reflected in an increased land value to the newer structure.

Capital return is reflected in that the denser the district, the greater the return on like properties. Therefore, the economic land value may be said to have a direct relation to a per room income rental value per month of the district, the ratio being 1 to 6 of the per front foot value of land, subject to all deductions or increases as may be applied to street and land improvements.

Residential Property

In small suburban communities, an unimproved lot may be purchased at from \$10.00 to \$12.00 per front foot. At least \$20.00 per front foot must be spent for improvements to make living on such a lot desirable and many more thousands of dollars must be spent to make such a community a prosperous business center.

Residential land is usually sold on a front foot basis; therefore, in analyzing the land upon which an appraisement is being made, the appraiser must first arrive at a *Basic Unit Value* per front foot for the character of the neighborhood and its improvements.

Experience has shown that the average economic land value is from 20 percent on smaller units to 37½ percent on larger units of the entire land and improvement value. To consider only a percentage of the gross sales value as the final economic value of land would not be justifiable. We therefore must weigh and analyze the components that make up the underlying improvements, first as to street and public service, then as to district service, and finally the items that pertain to the ground itself.

DETERMINING BASIC FACTOR

The basic land value formula is assumed to give a 100 percent value on 100 percent standard lot for class, and represents the price of one front foot of that lot. In applying the corrective factors it may be found that some items show a plus percentage while others show a minus percentage. These corrective factors

will be summed together, and total result in either plus or minus percentage applied against the base unit value which will give the actual economic unit value.

The *Unit Value*, as given in Basic Land Value Formulas, is based on a normal condition. This condition is not necessarily the best but is based on the general average. Therefore, when deviations from the normal are found the BASIC FACTOR is compensated by a percentage increase or decrease according to the actual conditions in the increment of Value itself. This percentage change is in a ratio to the effect the locality improvement has on land, giving either an increase or loss in value as it deviates from the normal.

The appraiser in determining the economic land value must therefore determine the basic factor of value for the particular type of land under consideration, which will be called hereafter the "BASE UNIT VALUE." He will analyze and compare the particular lot under consideration with the corrective factors as given in the manual and apply such corrective percentages to the "BASE UNIT VALUE" where it is found that the lot under consideration is above or below normal.

Business Land Basic Factors

Retail district base land value is gauged by average rent-paying capacity of the first floor store room merchant. His ability in this direction is in proportion to his sales volume.

Therefore, in considering a business location for its land value, one must make a study of adjacent properties, determining their rentals, the length of the leases, the depth of the store space, and similar components.

The following formula will give a fair average of basic unit value per front foot and makes due allowances for normal income return less operating expense on ordinary short term leases.

$$\frac{\text{Rental Value per Mo.} \times 80}{\text{Front Ft.}} = \text{Base Value per Front Ft.}$$

This formula establishes the starting point from which the final value may be computed. The corrections based on local conditions and found on the following pages are applied as deviation corrections to the basic unit value.

When income is derived from store rentals which includes the use of other than the first floor of the buildings, allowance should be made for these sections and deducted from the rental value per month used.

One piece of property does not determine the neighborhood land value. The appraiser must get information on at least four adjacent locations and average these in establishing the rental value per month per front foot.

Apartment Land Basic Factors

The value of apartment property is more or less governed by income, and as income is reflected in the room rental as the unit of measurement the following table is set up as a basis for determining basic land factor.

Table of Comparative Values

\$5.00 per room per mo.....	\$30.00 per front foot
7.50 per room per mo.....	45.00 per front foot
10.00 per room per mo.....	60.00 per front foot
12.50 per room per mo.....	75.00 per front foot
15.00 per room per mo.....	90.00 per front foot
17.50 per room per mo.....	105.00 per front foot
20.00 per room per mo.....	120.00 per front foot
22.50 per room per mo.....	135.00 per front foot
25.00 per room per mo.....	150.00 per front foot

Note: High rental districts, apartment hotels, etc., add 50% to above table.

When apartments are located in residential districts, where there is an insufficient number of competitive properties to get an average room rental value of the district, residential land value methods should be used, or an average of both methods, to obtain a fair value.

Room Compensation Allowance

- One room and bath efficiency with pullman kitchenette class as 1½ rooms.
- Combination kitchen and dinette to be classed as one room.
- Normal bathroom to be classed as one-half room.
- If extra lavatory class as one-fourth room.
- Pullman kitchenette built into wall equipped with stove, sink, cabinet and electric refrigeration, class as one-fourth room.
- If all gas and electric is paid by the house, class as one-eighth room.

A rental value of a piece of property is considerably affected by depreciation and obsolescence. It may be assumed that in a normal neighborhood that such depreciation and obsolescence factors as may have been applied to the building should therefore be applied to the per room rental deduction, not as a decrease but as an increase, to bring the room rental basis back to normal. This theory should not be applied to neighborhoods on the decline.

Residential Land Basic Factors

Determining the Character of Neighborhood

To determine the economic character of a neighborhood we must first analyze the block as a whole. This may be done by assembling what facts are available of current or past sales, not necessarily sales of land only, but sales of the completed unit,

the house and lot. These sales are listed with dates of their transaction.

This date of sale represents an INDEX VALUE of the items under which these sales are consummated. Therefore, they should be converted into an INDEX VALUE representing the present trend of value. As an example, let us assume that a piece of property was sold in 1924 under an Index of the Dollar Value 105.1. Today's Index is 85.5. The price of sale was \$10,000.00; today's price, therefore, is \$8,135.00 and is arrived at as follows:

$$\frac{1934 \text{ price}}{1924 \text{ price}} = \frac{1934 \text{ index}}{1924 \text{ index}} \text{ OR } \frac{1934 \text{ price}}{\$10,000.00} = \frac{85.5}{105.1}$$

$$\text{Therefore } 1934 \text{ price} = \frac{85.5}{105.1} \times \$10,000.00 \text{ or } \$8,135.00.$$

On this basis only can it be compared with a sale today, if the purchasing power of the dollar is to be recognized.

Example:

— Conversion of Sales —			
Date	Sale	Index	Present Value
1928	\$11,000.00	99.8	\$9,424.00
1929	10,000.00	99.6	8,584.00
1930	9,500.00	97.2	8,356.00
1931	8,500.00	85.7	8,480.00
			<u>\$34,844.00</u>

Average Value, \$8,711.00

Note: Current Index 85.5. See Residential Land Value Table for economic neighborhood value, \$8,000.00 to \$10,000.00, base \$40.00 per front foot.

Index Numbers Representing Trend of Value

Note: In the use of Index Numbers for the conversion of value between one date and another in establishing the basic land value, the appraiser should use the table given herewith instead of current local index, unless he has the local index for both dates necessary to the completion of the conversion. This table will reflect the percentage change which would not be reflected if a combination of two tables were used.

Year	Index Number	Year	Index Number
1913	46.1	1924	105.1
1914	43.9	1925	100.0
1915	45.9	1926	100.6
1916	64.0	1927	100.0
1917	89.5	1928	99.8
1918	93.4	1929	99.6
1919	97.7	1930	97.2
1920	122.8	1931	85.7
1921	98.6	1932	81.6
1922	85.4	1933	79.5
1923	104.5	1934	92.0

Basic Residential Land Value Table

The following table is a guide to the proper proportion of land value per front foot to average sales value in the neighborhood.

Sale Value	Economic Lot Width	Ratio of Price Land to Bldg.	Land Value Front Foot
\$4,000.00	30-ft.	15-20 %	\$26.00
5,000.00	32.5-ft.	16-20 %	30.00
6,000.00	35-ft.	17-20 %	35.00
7,000.00	37.5-ft.	18-20 %	37.50
8,000.00	40-ft.	19-20 %	40.00
10,000.00	45-ft.	20 %	45.00
12,000.00	50-ft.	21 %	50.00
14,000.00	55-ft.	22 %	55.00
16,000.00	60-ft.	23 %	60.00
18,000.00	65-ft.	24 %	65.00
20,000.00	70-ft.	25 %	70.00
22,000.00	75-ft.	26 %	75.00
24,000.00	80-ft.	27 %	80.00
26,000.00	85-ft.	28 %	85.00
28,000.00	90-ft.	29 %	90.00
30,000.00	95-ft.	30 %	95.00
32,000.00	100-ft.	31 %	99.00
34,000.00	105-ft.	32 %	103.00
36,000.00	110-ft.	33 %	107.00
38,000.00	115-ft.	34 %	112.00
40,000.00	120-ft.	35 %	116.00
42,000.00	125-ft.	35.5 %	119.00
44,000.00	130-ft.	36 %	122.00
46,000.00	135-ft.	36.5 %	125.00
48,000.00	140-ft.	37 %	128.00
50,000.00	145-ft.	37.5 %	130.00

Residential Lot Widths

Width must be given consideration on residential lots; desirability of habitation will be greatly diminished when overcrowding is prevalent. Normal lot widths for various priced properties are given in "BASIC RESIDENTIAL LAND VALUE TABLE." Deduct 1 percent for each foot of deficiency of width. No charge or credit to be made for oversize lots.

CORRECTIVE FACTORS**Land Depth Table**

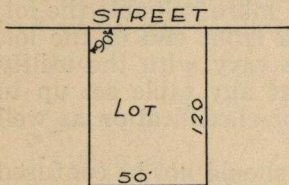
It is generally recognized that two increments of value affect the lot in relation to its depth. First, the more valuable the lot, the more concentration of value near the front end of the lot, and second, the ratio of depth and value vary with the utility of the lot. It is therefore necessary that any table set up to correct this increment of value provide for classification as well as the variable depth.

The depth tables as established herein should not be confused with those generally used for assessment purposes, as there have been many more contingencies taken into consideration than are usually used in tables for tax purposes.

Depth Feet	Business	Apartment	Residential
25	—51 %	—61 %	—76 %
30	—45 %	—58 %	—72 %
35	—40 %	—54 %	—68 %
40	—35 %	—51 %	—64 %
45	—30 %	—48 %	—60 %
50	—26 %	—45 %	—56 %
55	—23 %	—42 %	—52 %
60	—20 %	—38 %	—48 %
65	—17 %	—34 %	—44 %
70	—14 %	—30 %	—40 %
75	—11 %	—26 %	—37 %
80	—9 %	—22 %	—34 %
85	—7 %	—19 %	—31 %
90	—4 %	—16 %	—28 %
95	—2 %	—13 %	—25 %
100	0	—11 %	—22 %
105	+2 %	—8 %	—19 %
110	+4 %	—6 %	—17 %
115	+5.5 %	—4 %	—14 %
120	+7.5 %	—2 %	—11 %
125	+8.5 %	0	—9 %
130	+9.5 %	+2 %	—7 %
135	+10.5 %	+4 %	—5 %
140	+12 %	+6 %	—3 %
145	+13 %	+8 %	—1 %
150	+15 %	+10 %	0
160	+16 %	+11 %	+2.5 %
170	+17 %	+12 %	+5 %
180	+18 %	+13 %	+7 %
190	+19 %	+14 %	+9 %
200	+20 %	+15 %	+10 %
210	+21 %	+16 %	+11 %
220	+22 %	+17 %	+12 %
230	+23 %	+18 %	+13 %
240	+24 %	+19 %	+14 %
250	+25 %	+20 %	+15 %

Lot Shape Influence

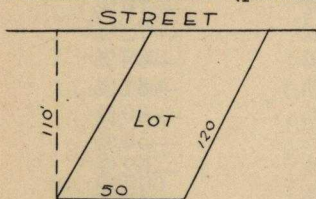
RECTANGULAR LOTS: This type of lot is known as the normal shape lot, the only variation coming in its depth, the correction for depth to be made from Depth tables, based on its classification of improvement:



Business, Apartment, Residential.

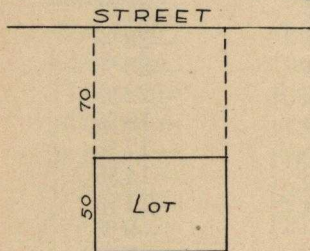
Example: Business land 120 feet depth, corrective factor, +7.5%.

PARALLEL LOTS (parallelograms): In the computation of this lot, the perpendicular depth from the street rather than the lot line depth is used for corrective factor from depth tables.



Example: Business land 110 feet depth, corrective factor, +4%.

BACK LOTS: Lots having no street frontage are termed back lots and are usually the result of adjoining ownership. To find corrective factor, add 100 to corrective factor for greatest distance from street; subtract corrective factor for least distance, plus 100; subtract 100 from result to find corrective factor for back lot, to be used as the unit percentage.



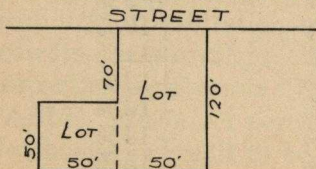
Example: Business land:

$$120\text{-ft. Business} = 100 + 7.5\% = 107.5\%$$

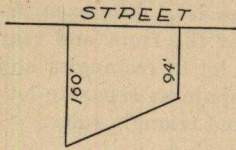
$$70\text{-ft. Business} = 100 - 14\% = 86\%$$

$$21.5\% - 100 = -78.5\%$$

L SHAPED LOTS: An L shaped lot is a combination of a rectangular and a back lot. The computation is therefore the sum of the two lots.

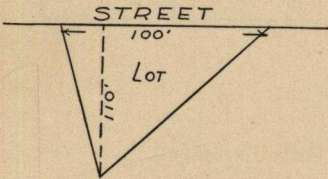


PARALLEL SIDES OF UNEQUAL DEPTH: A lot that has its side lines parallel and perpendicular depths unequal: average the length of the two sides as depth and use actual street frontage as lot width.



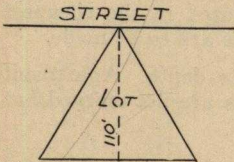
Example: $\frac{94\text{-ft.} + 160\text{-ft.}}{2} = 127\text{-ft., corrective factor, } +2\%$

TRIANGLE WITH BASE ON STREET: Use 65 percent of the actual street frontage as lot width and the percentage given in depth table for the perpendicular depth.

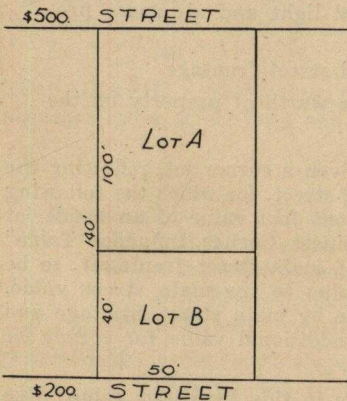


Example: Frontage $100\text{-ft.} \times 65\% = 65\text{-ft.}$
Depth $110\text{-ft.} = \text{corrective factor, } +4\%$.

TRIANGLE WITH APEX ON STREET: Use 35 percent of the base as the lot width and the perpendicular depth as given in depth table.

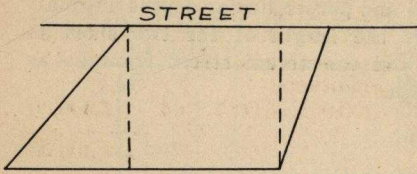


DOUBLE FRONTAGE—LOT MERGERS: When a lot extends through from one street to another and has a higher unit foot value on one street than the other, the value must be merged in a ratio influence of value. To find this neutral point, add the high and low unit values. Divide the number of feet in depth by the sum thus obtained; then multiply the quotient by each of the units separately. The result will be the number of feet in depth each unit must extend into the lot before it will merge with the other unit. Then calculate as separate lots, on basis of these depths.

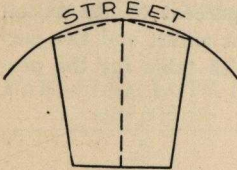


Example: $\$500.00 + \$200.00 = \$700.00$
 $140\text{ (ft.)} \div (\$) 700.00 = .20$
 $(\$) 500.00 \times .20 = 100\text{ (ft.) Depth of A Lot}$
 $(\$) 200.00 \times .20 = 40\text{ (ft.) Depth of B Lot.}$

IRREGULAR LOTS: Where neither of the side lines are perpendicular to the street or there is a difference between the width of the front and rear lines: reduce the lot to rectangles and triangles and compute as separate lots under rectangle and triangle rules.



CURVED LOTS: Reduce to the nearest equivalent rectangle or irregular shape lot and compute as above.



Corner Lots

CUT-OFF CORNERS: Where a corner of a lot is cut off by a street line, the deduction in value, if appreciable, is made because of loss of area only; the street frontage is not lost. Therefore, the value of such area to be deducted must come from the square foot value situated in the cheapest part of the lot. Where such area is small no deductions are to be made.

Exceptions: Residential lots less than 150 feet in depth. Apartment lots less than 125 feet in depth fronting on two streets are not merged but given the credit allowed for an alley.

CORNER LOT INFLUENCE: Corner lot values may be said to increase due to three fundamental reasons, viz:

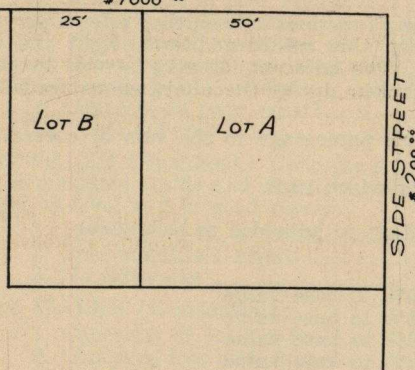
1. Increased utility due to additional light and air space produced by the intersecting street.
2. Additional utility due to increased street frontage.
3. A reflection of value given by the worth of property on the intersecting street.

An additional value must therefore be given a corner lot, reflecting the value of the land abutting on the intersecting street, for which the following formula is provided. First, establish the front foot value of an inside lot on the intersecting street. From the "Business Corner Influence Table" below, find percentage of value (on basis of main street frontage), to be transferred from the intersecting street value to the main street value. Multiply intersecting street front foot value by main street frontage and by percentage obtained from table, to find additional value for corner lot influence.

Lots adjoining corner lots share slightly in this increased value. Use difference between percentages for farthest and closest points, measured from the corner.

Corner influence tables are at best very arbitrary, and must be used with extreme caution.

MAIN STREET
\$1,000.00



Example (Lot A):

Main Street Value,
(\$1,000.00 × 50 (ft.)) = \$50,000.00
Intersecting Street,
additional
200.00 × 50 (ft.) × .64 6,400.00
\$56,400.00

Example (Lot B):

Main Street Value,
(\$1,000.00 × 25 (ft.)) = \$25,000.00
Intersecting street,
additional
200.00 × 25 (ft.) × .075 375.00
\$25,375.00

Business Corner Influence Table of Percentages

Residential corners, use 25 percent of table and do not extend beyond first lot or 50 feet.

Apartment corners, use 50 percent of table and do not extend beyond first building or 75 feet.

Semi-business corners, use 75 percent of table.

5-ft. .10	26-ft. .42	42-ft. .58	70-ft. .70
10-ft. .18	28-ft. .44	44-ft. .60	75-ft. .715
12-ft. .22	30-ft. .46	46-ft. .62	80-ft. .725
14-ft. .26	32-ft. .48	48-ft. .63	85-ft. .73
16-ft. .30	34-ft. .50	50-ft. .64	90-ft. .74
18-ft. .32	36-ft. .52	54-ft. .66	95-ft. .745
20-ft. .34	38-ft. .54	58-ft. .67	100-ft. .75
22-ft. .37	39-ft. .55	62-ft. .68	
24-ft. .40	40-ft. .56	66-ft. .69	

TOPOGRAPHY: The terrain of a lot affects its value both as to its height above or below street level and the grade of the street itself.

Table

	Bus.	Res.
Terrain: Level to 5-ft. above grade, normal.....		0%
2-ft. below or not over 7-ft. above.....		—5%
4-ft. below or not over 9-ft. above.....		—15%
8-ft. below or not over 12-ft. above.....		—30%
over 8-ft. below or over 15-ft. above.....		—50%
Street Grade: Level to 3% slope, normal		
3% to 5% slope.....	—1%	0
5% to 10% slope.....	—5%	—2%
10% to 15%	—10%	—5%
15% to 20%	—20%	—10%

Note: A 1 percent slope is equal to 1 foot rise in each 100 feet.

Alleys and Streets

ALLEY (Business): Alleys have two functions. First, they offer a service ingress to the property, and secondly, they afford additional light and air space, giving greater utility value. The adjacent lot may be said to gain 40 percent of the street frontage taken up by the alley where the alley runs along the side of the lot.

To care for this factor as a unit percentage in the sum of corrective factors, proceed as follows:

Example: Lot width 50-ft., Alley width 12-ft.

40% of 12-ft.=4.8-ft.

4.8-ft./50-ft.=9.6%, unit percentage to be added to base value.

REAR ALLEYS (Business):

8-ft., add 5% to base value
10-ft., add 8% to base value
12-ft., add 10% to base value
over 12-ft., add 12% to base value

ALLEYS OR SERVICE DRIVES (Residential): Residential lots should be provided with ingress for service. Either side drive or alley may be considered normal, if paved; otherwise apply corrective factors:

Alley or driveways not paved.....—5%
No alley or drive but space for same.....—10%
No space available due to narrow lot.....—15%

STREET WIDTH (Business): Normal business streets should be at least 50 feet in width to create sufficient light, air, and room for traffic.

1. Streets below 50 feet in width, deduct 2 percent for each foot of deficiency.

2. Streets above 50 feet in width, allow 1 percent for each additional foot in excess of width up to 65 feet and $\frac{1}{2}$ percent up to 75 feet.

STREET WIDTH (Residential): The following table sets forth the minimum requirements for street width and set-back, based on neighborhood value standards.

Value of Property	Street Width	Set-Back
up to \$5,000.00	30-ft.	20-ft.
up to 7,500.00	35-ft.	20-ft.
up to 10,000.00	40-ft.	25-ft.
up to 12,500.00	40-ft.	30-ft.
up to 15,000.00	50-ft.	30-ft.
up to 17,500.00	50-ft.	35-ft.
up to 20,000.00	55-ft.	40-ft.
25,000.00 and over	60-ft.	40-ft.

For each foot of deficiency from standard, deduct 1 percent from base unit value. No charge to be made if additional set-back is made to offset street width deficiency, but set-back must be applicable to entire group.

STREET PAVING: Poorly paved streets are a detriment to a community and affect values, creating bad impressions and cheapening the entire surroundings. Make allowances or deficiency charges as follows:

1. Full concrete with curb and gutter, best construction...+10%
2. Full concrete with gutter only.....+5%
3. Asphalt on concrete base, concrete or granite curb
and gutters+10%
4. Asphalt on concrete base, gutters only.....+5%
5. Asphalt on macadam base, curbed.....+2%
6. Tar bound macadam, curb and gutter.....normal
7. Wood block on concrete, curb and gutter.....normal

8. Tar bound macadam, no curb.....	-5%
9. Wood block in poor repair.....	-8%
10. Water bound macadam, no curb.....	-5%
11. Water bound macadam, no curb (oiled).....	-2%
12. Gravel, graded and oiled, curb.....	-5%
13. Gravel, graded and oiled, no curb.....	-10%
14. Concrete in poor repair.....	-15%
15. Dirt road only.....	-15%

SIDEWALKS (Business): Concrete sidewalks should be of sufficient width to accommodate traffic and should extend from store front to curb line, and should be level and in good repair.

1. Less than 6-ft. in width.....	-2%
2. Poor condition, repair.....	-5%
3. No sidewalks.....	-10%

SIDE WALKS (Residential):

1. Concrete, at least 3-ft.	0
2. Concrete, less than 3-ft.....	-2%
3. None, but standard type of paved street.....	-5%
4. None and no paved street.....	-10%

STREET LIGHTING: Under normal conditions it is assumed that sufficient street lighting will be found in a business section to produce artificial light for traffic at all times.

1. Electric overhead arc.....	0
2. Gas lighting.....	-2%
3. Insufficient light.....	-3%
4. None.....	-5%
5. Boulevard lights, sparingly placed but with sufficient light.....	+3%
6. Boulevard lights, brightly lighted.....	+5%

TELEPHONE SERVICE:

1. All wires underground.....	+2%
2. Wires overhead on poles.....	0
3. No public service available.....	-2%

SEWERS:

1. Standard city connections.....	0
2. Approved type of cesspool.....	-3%
3. None.....	-8%

GAS:

1. Standard city connections.....	0
2. None.....	-10%

WATER:

1. Standard city connection, high pressure.....	0
2. Standard city connection, low pressure only.....	-3%
3. Wells or cisterns of approved type.....	-8%
4. Hard water only available.....	-5%

ELECTRICITY:

1. Standard city service on poles.....	0
2. Underground service.....	+3%
3. None.....	-10%

Zoning Laws

District: The purposes of this classification is to determine the probable permanency of features characterizing the location. It is impossible to restrict the use of the property in deeds, but City Planning and Zoning does help establish a location.

Classification

Business

1. Restricted—Business "A": Main retail shopping center, banking district, hotels, office buildings, and theaters.
2. Semi-Restricted—Business "B": Suburban shopping centers, suburban theaters, wholesale districts, railroad passenger stations.

Industrial

1. Restricted—Industrial "A": Manufacturing limited to the lighter types, railroad freight business.
2. Semi-Restricted—Industrial "B": Heavy manufacturing.
3. Unrestricted—Industrial "C": Unlimited classification.

Residential

1. Residence "A": One family detached homes requiring large lots and deep set-back.
2. Residence "B": One or more family houses, small apartments not over three stories in height, churches, schools and boarding houses.
3. Residence "C": Large apartments more than three stories, hotels, etc.

Overlapping of classification is very prevalent in many cities, due to recent zoning ordinances. There is no help for this situation, but it is one of the items that may tend to cause future obsolescence.

Another item that may cause loss of value may be termed EXPOSURE from a lower classification. When this exposure or overlapping of classification occurs, the probabilities are that the money value of the land or location will be lowered, sooner or later, and should be penalized.

Zoning

Zoning laws have been the means of stabilizing values and locations in many cities, and it is a proven fact that where these laws are in effect and enforced, the value is reflected in the price of the land. Restrictions in deeds also have their effect, providing the entire neighborhood is so restricted.

1. No zoning law or restrictions.....	—15%
2. Restrictions only	—10%
3. Zoning law but not enforced.....	—5%
4. Zoning law properly enforced	0
5. Residence "A".....	+20%
6. Residence "B".....	0
7. Residence "C" (if apartment location).....	+10%
8. Business "A".....	+20%

Percentages Developed

New districts do not have the same value as an established location. Zoning offsets this factor to a great extent, but until a location is at least 75 percent occupied, precaution should be taken.

1. Location developed 75% or more.....	Normal
2. Location less than 75% developed.....	—5%
3. Location less than 65% developed.....	—10%
4. Location less than 55% developed.....	—15%
5. Location developed 50% or less.....	—17½% to —25%

Note: If 100 percent zoned or restricted, deduct one-half charge only.

Exposure

Under this heading we find two elements that affect value. One, bad influence from adjacent properties; two, influence of adjacent undesirable districts in overlapping and changing the classification or character of the neighborhood.

Exposure	— Exposed Property —				
	Bus. A	Bus. B	Res. A	Res. B	Res. C
Business "A" within 100 feet	0	+10%	-30%	-20%	-10%
within same block	0	+5%	-20%	-10%	-5%
within adjacent block	0	+2%	-10%	-5%	0
Business "B" within 100 feet	-10%	0	-20%	-12%	-5%
within same block	-5%	0	-15%	-7%	0
within adjacent block	0	0	-10%	-5%	+5%
Residence "A" within 100 feet	0	0	0	+10%	+15%
within same block	0	0	0	+5%	+10%
Residence "B" within 100 feet	0	0	-10%	0	0
Residence "C" within 100 feet	0	+5%	-20%	-10%	0
within same block	0	+5%	-10%	-5%	0
R. R. main line within 1 block	0	-5%	-20%	-15%	-20%
R. R. main line within 2 blocks	0	-2%	-10%	-8%	-10%
Arterial highway	+10%	+10%	-15%	-10%	-5%
Industrial property 1 block	-5%	-10%	-40%	-30%	-30%
Industrial property 2 blocks	0	-5%	-30%	-20%	-20%

Undesirable population, treat same as industrial property.

Residential Transportation Facilities

Under this heading we find three elements affecting value:

1. Distance to nearest point of transportation.
2. Time of travel from point of contact to main business center.
3. Cost of transportation.

(This table should not be applied in small communities.)

Assuming that all blocks are 300 feet long.

Distance to car or bus line:

1½ blocks or under	+5%
2 blocks not over 3 blocks	normal
3 blocks not over 4 blocks	-3%
4 blocks not over 5 blocks	-5%
5 blocks not over 6 blocks	-10%
6 blocks and over	-15%

Time of travel to main business center:

Street car travel time under 30 minutes	normal
Street car travel time under 45 minutes	-5%
Street car travel time under 60 minutes	-10%
Street car travel time under 1 hour 15 minutes	-15%
Street car travel time over 1 hour 15 minutes	-20%

Cost of transportation:

Rate of fare one way 5 cents	+6%
Rate of fare one way 6 cents	+4%
Rate of fare one way 7 cents	+2%
Rate of fare one way 8 cents	normal
Rate of fare one way 9 cents	-2%
Rate of fare one way 10 cents	-4%
Rate of fare one way 11 cents	-6%
Rate of fare one way 12 cents	-8%

EFFECT OF DISTANCES (Residential)

To neighborhood business center:

Within 3 blocks.....	+5%
Up to and not over 5 blocks.....	0
Up to and not over 8 blocks.....	-2%
Up to and not over 10 blocks.....	-5%
Over 10 blocks.....	-10%

Grade schools:

Within 3 blocks.....	+5%
Up to and not over 5 blocks.....	0
Up to and not over 8 blocks.....	-2%
Up to ½ mile.....	-3%
Up to 1 mile.....	-5%
Over 1 mile.....	-10%

High schools:

Within 10 blocks.....	+5%
Up to and not over 1 mile.....	0
Up to and not over 2 miles.....	-3%
Over 2 miles.....	-5%

Chapter XIII

LAND IMPROVEMENTS

Land improvements as used in this analysis are that portion of the value derived from beautifying the outside surroundings.

GRADING: Rough and finished grading costs from \$25.00 on the small dwelling to \$100.00 on the more expensive type. A fair allowance is about \$1.00 per front foot of yard, based on a 25-ft. set-back; if lot is irregular, take average width.

SODDING: Ordinary work, 25c per square yard laid on surface, to 30c on bank. Where an extra good grade of sod is used, judged by its levelness and smoothness, allow 35c per yard.

For quick figuring, assuming that front and side yard are sodded only, the following table may be used on ordinary work.

Set-back from street:	15-ft.	20-ft.	25-ft.	30-ft.	35-ft.	40-ft.
Charge per front foot.....	\$1.00	\$1.50	\$2.00	\$2.50	\$3.00	\$3.50

Note: The above charges allow for side yard and around drives and walks.

SHRUBBERY: Allow \$1.50 to \$5.00 per shrub, depending on the size and type of plant.

Ordinary shrubs, poorly arranged.....	no allowance
Ordinary shrubs, well arranged.....	\$1.50 per plant
Good grade shrubs, poorly arranged.....	1.50 per plant
Good grade shrubs, well arranged.....	2.50 per plant
Good grade shrubs, well arranged.....	3.50 per plant
Expert landscaping	5.00 per plant

CONCRETE WALKS: 2-ft. width, 3-in. concrete base, 1-in. troweled surface laid on cinder bed. First-class work. Allow for each 5-ft. of set-back from street. \$3.00
 2½-ft. width, same as above. Allow for each 5-ft. set-back from street..... 3.50
 3-ft. width, same as above. Allow for each 5-ft. set-back from street..... 4.50

Credits

If walks laid on curve, increase 10 % to 20 %.
 If steps, allow \$1.50, \$1.75, \$2.00 for each riser.

Deficiencies

Price Index 100

Poor workmanship and materials, deduct.....	—100 %
Insufficient thickness of material, deduct.....	—50 %
Improper troweling of finished surface, deduct....	—25 %

PAVING:

Asphalt with concrete base	\$.35 per sq. ft.
Brick, without base.....	.25 per sq. ft.

Brick, with base.....	.40 per sq. ft.
Concrete 4-in. ....	.15 per sq. ft.
6-in. ....	.25 per sq. ft.
8-in. ....	.30 per sq. ft.
Granite .....	.35 per sq. ft.
Wood block .....	.30 per sq. ft.

DRIVEWAYS: Driveways may be classed in three general groups, the solid concrete drive, the ribbon drive, and those constructed of loose material such as gravel, crushed rock, etc.

Solid Concrete: Allow the following value according to width of drive, for each foot of set-back:

6-ft. width	\$1.25
7-ft. width	1.70
8-ft. width	1.90
9-ft. width	2.10
10-ft. width	2.30

Concrete Aprons: Allow 25c per square foot of area.

Ribbon Drive (concrete): Double strips of concrete usually running from street to garage apron. For each foot of set-back, including both strips, allow:

12-in. runways	\$.70
15-in. runways .....	.85
18-in. runways	1.00
20-in. runways	1.05
24-in. runways	1.20

Gravel Driveways: Crushed rock construction of sufficient thickness to stand load, allow per foot of set-back:

6-ft. width	\$1.20
8-ft. width	1.60
10-ft. width	2.00

All prices are based on first-class work. No allowance is made unless such condition is found.

COST OF FENCES Per Linear Foot:

Cyclone 2-in. Mesh:

4-ft. high	\$.80 per linear ft.
5-ft. high .....	.90 per linear ft.
6-ft. high	1.00 per linear ft.
8-ft. high	1.25 per linear ft.
10-ft. high	1.50 per linear ft.
12-ft. high	1.75 per linear ft.

Index 100

Light woven wire, steel posts in concrete, top rail or tubing with or without strand of barb wire, above rail:

4-ft. high, any length.....	\$.30 per linear ft.
5-ft. high, any length.....	.35 per linear ft.
6-ft. high, any length.....	.40 per linear ft.

Light woven wire, wood posts:

4-ft. high, any length.....	.25 per linear ft.
5-ft. high, any length.....	.30 per linear ft.
6-ft. high, any length.....	.35 per linear ft.

Tennis court fence, iron posts:

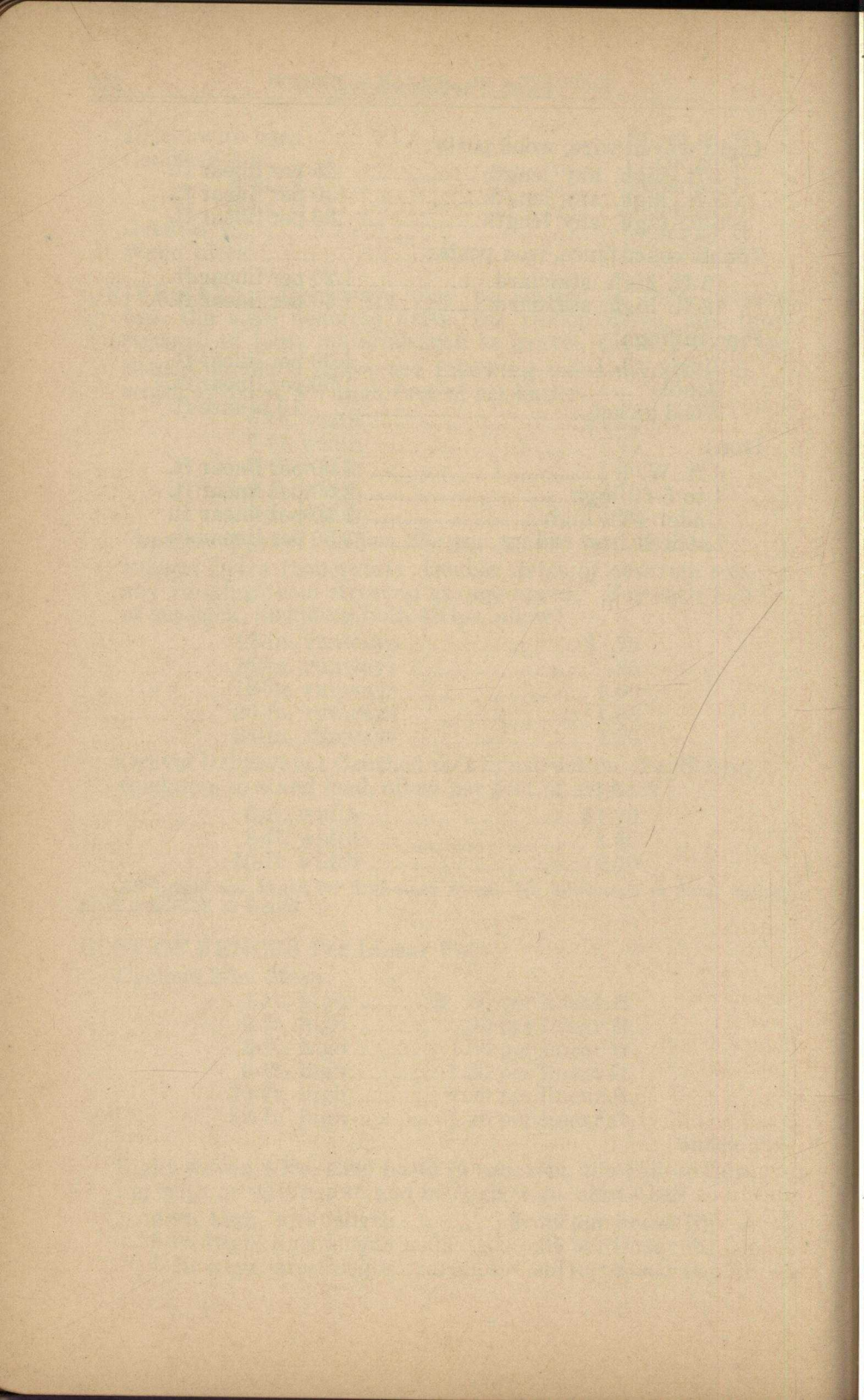
10-ft. high, standard.....	1.20 per linear ft.
12-ft. high, standard.....	1.40 per linear ft.

Pipe railing:

Single	1.00 per linear ft.
Double	1.50 per linear ft.
Wood picket .....	.10 square ft.

Iron:

6-ft. W. I.	3.00 per linear ft.
4 to 5-ft. high.....	2.00 per linear ft.
Under 4-ft. high.....	1.50 per linear ft.
Latticed iron railing	1.50 per linear ft.



Chapter XIV

REAL ESTATE MERCHANDISING

IT IS economically impossible for each individual member of society to find and to assemble for himself all the commodities which are necessary for his daily welfare. This situation has given rise to merchandising specialists who will bring together the commodities which society needs in the right quantities, in the right places, at the right times, and at the right prices. In the measurement of the efficiency with which he carries out these four functions, is the test of the value of the service of the merchandiser.

It is in the performance of the fourth function "at the right prices" that the service of the real estate merchandising specialist may have appeared weak. This is not so much the fault of the merchandiser but is rather due to the peculiar character of the commodity in which he deals, and to the attitude of buyers and sellers of real estate.

Perplexing Pricing Problem

Of the many commodities used by man, real estate is one of the most important because it meets the basic need for shelter. Yet, of all, perhaps, it presents the most difficulty in procurement, not because it is not available but because its acquisition involves so perplexing a problem of pricing.

The pricing problem of the buyer or seller of other commodities is relatively simple. With consumable goods, such as food and clothing, price is determined by the open competition of quite well standardized merchandise. With investment securities, such as stocks and bonds, price is determined in organized exchanges. But these facilities are impossible with real estate because it is a non-standardizable commodity. There are no two pieces exactly alike, for no two sections of the earth's surface can occupy the same location, and differences in location create marked differences in value. There are, too, few improvements which are exactly similar in character and design of construction.

Another complicating factor in the pricing of real estate is its durability. It is not consumed quickly in use; hence, the expenditure for it may be characterized as a "long-time" investment. This introduces into the valuation the time element, with questions as to what may or may not happen in the future.

A further complicating factor, particularly with regard to residential property may be called the amenity aspect of real estate ownership. This refers to the peculiar likes and dislikes

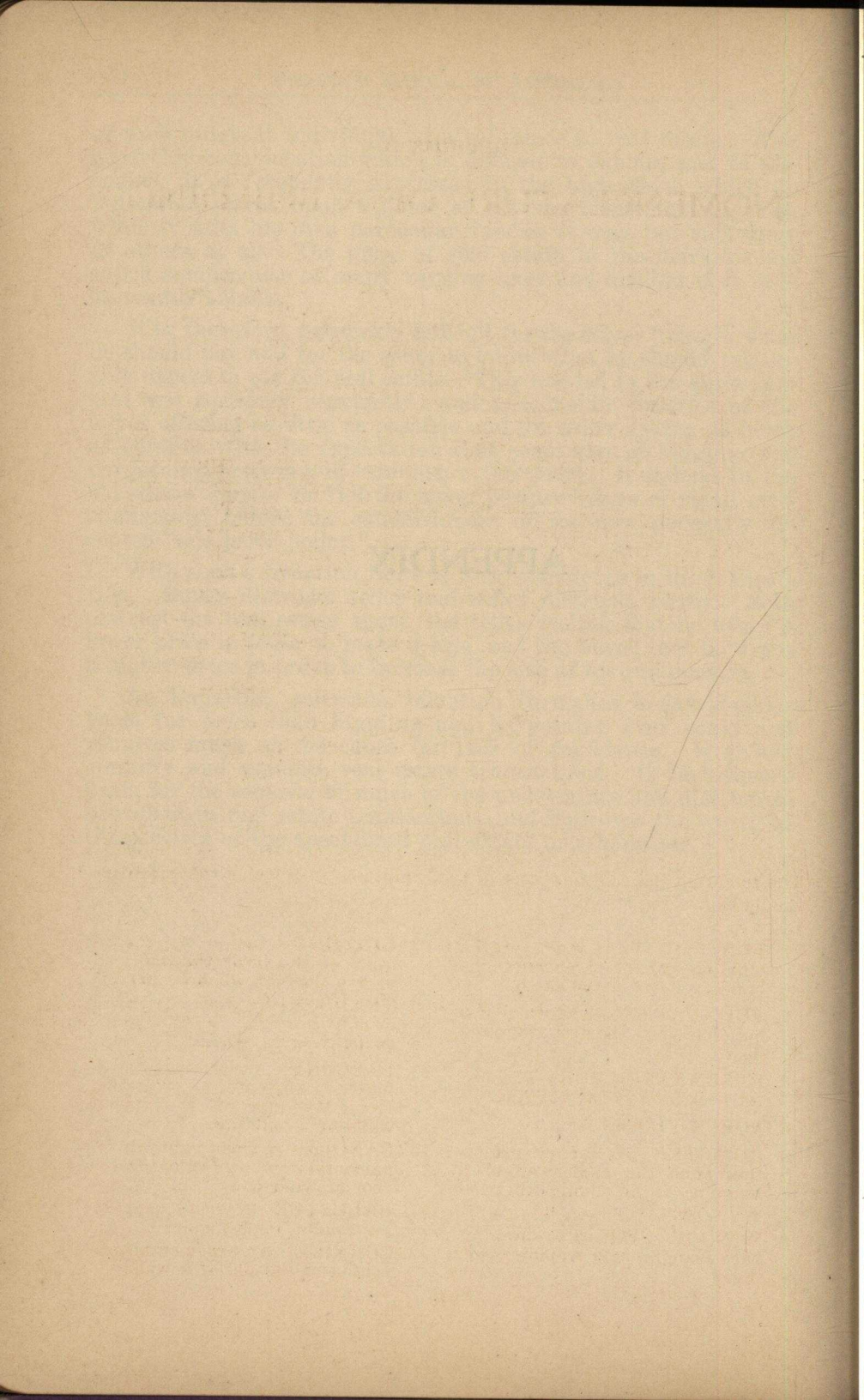
of each different individual with reference to real estate. It is a psychic consideration which is difficult to explain and to discount. It is frequently expressed in the high value which an individual places upon a home of his own construction. Yet, while it suits his own particular fancies it may not suit those of others at all. The price of real estate in the market must suit a compromise of many varying likes and dislikes if it is to be readily salable.

It is, therefore, extremely difficult for the buyer to know what he should pay and for the seller to know what he should reasonably expect to get for real estate. This has led to the quite general and certainly unscientific and uneconomic practice of the buyer offering as little as possible and the seller asking as much as possible with the expectation that some sort of higgling and bargaining process will establish a fair price. It smacks of the old *caveat emptor* or "let the buyer beware" days of retail merchandising, before the establishment of the now generally accepted "one price policy."

With such a situation there is little confidence in the transaction. Buyer distrusts seller and seller distrusts buyer. Both distrust the real estate agent, the seller feeling that he urges a lower price in order to make a sale, and the buyer that he urges a higher price in order to increase the size of his commission.

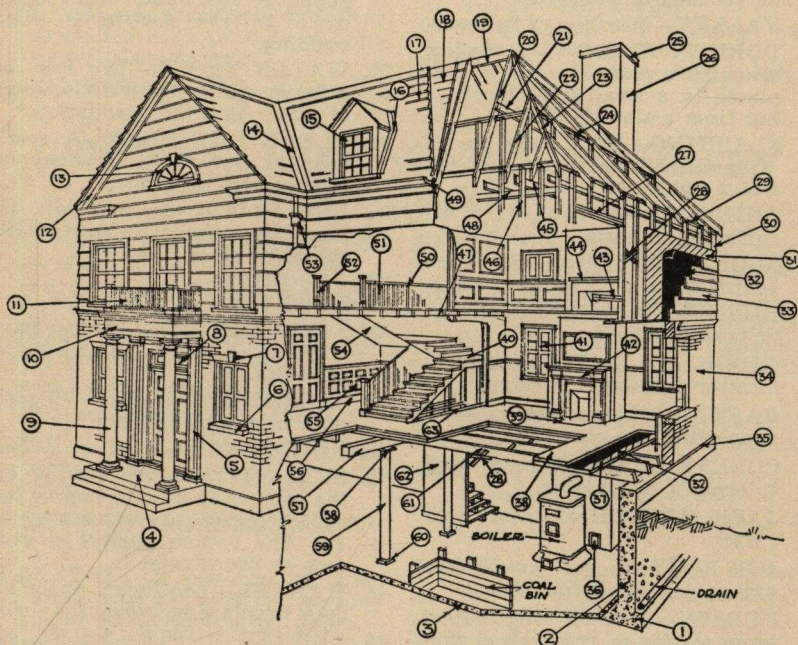
An impartial, scientific valuation furnishes a far sounder basis for price than higgling and bargaining ever could and removes much of the cause for lack of confidence. It should simplify and expedite real estate transactions. It furnishes a basis for the removal of much of the uncertainty and distrust so prevalent in real estate transactions, and improves the worth of the services of the specialized real estate merchandiser.

APPENDIX



Appendix A

NOMENCLATURE OF A BUILDING



Note: It is essential that the appraiser know the meaning of architectural terms which are in general use among contractors and builders. The following list contains most of the definitions with which the appraiser should be familiar:

1. FOOTING—That part of the building which transmits the building loads to the earth.
2. FOUNDATION—The walls of a building below the first or ground floor.
3. BASEMENT FLOOR—The lowest floor level in the building.
4. PORCH FLOOR—
5. PILASTER—A narrow projection from the main wall of a building to help support truss and girder loads.
6. WINDOW SILL—The lower or base framing of a window opening.
7. LINTEL—A wood or metal beam which carries the wall load over a door or window opening.
8. TRANSOM—A sash opening over a doorway.
9. PORCH COLUMN—
10. BALCONY—A platform or seating arrangement projecting from the interior or exterior walls of a building.
10. CANOPY—A small exterior, ornamental roof projection over a door or window.
11. BALUSTER—A small supporting column for a handrail.
12. CORNICE—An ornamental projection at the top of a wall.

12. **BARGE BOARD**—A wide trim board placed on the ends of a gable roof.
13. **FAN WINDOW**—A small half-oval window used for decorative or ventilating purposes.
14. **VALLEY**—The line of intersection of two roofs.
15. **DORMER WINDOW**—A window placed in a small gable projecting from a sloping roof.
16. **FLASHING**—Metal strips placed around roof openings to provide water tightness.
17. **SHINGLES**—A roof or wall surfacing material.
18. **ROOF SHEATHING**—Surface boards used as a base on roofs.
19. **RIDGE**—The top horizontal edge or peak of a roof.
19. **RIDGE POLE**—The structural member forming the ridge.
20. **RAFTER**—A structural member supporting the roof.
21. **COLLAR BEAM**—A beam used to brace a roof rafter.
22. **JACK RAFTER**—A short roof rafter.
23. **HIP ROOF**—A roof having the same pitch on all four sides.
24. **PURLIN**—A small longitudinal beam resting on trusses and supporting the roof.
25. **CHIMNEY CAP**—The finishing course at the top of a chimney.
26. **CHIMNEY**—A passageway for conveyance of smoke and gasses.
27. **HEADER**—(1) A joist cut between two other joists and perpendicular to them.
(2) A brick with its end to the face of the wall in which it is laid.
28. **BRIDGING**—Small wood braces between structural members, such as joists, which give lateral strength and support.
29. **PLATE**—A horizontal structural member used for supporting vertical structural members.
30. **CORNER POST**—
31. **SHEATHING**—The base covering over studding.
32. **INSULATION**—A felt paper used as a means of sound deadening or as a non-conductor of heat and cold.
33. **SIDING**—Finish lumber on exterior walls.
34. **BEARING WALL**—A wall which supports roof and floor loads, down to the footing of the building.
35. **WATER TABLE**—The base of a frame wall to prevent seepage of water into the foundation.
36. **CLEAN OUT DOOR**—A small door at bottom of chimney to remove soot or ashes.
37. **SUB FLOOR**—A floor laid on top of the floor joists underneath the finish floor.
38. **FLOORING**—
39. **HEARTH**—
40. **STAIR LANDING**—A floor part ways up or at the top of a flight of stairs.
41. **CASEMENT WINDOW**—A sash with hinges on the side.
42. **FIRE-PLACE**—
43. **SILL**—(1) Timbers resting on the ground or wood supports for supporting a superstructure.
(2) The bottom part of a window or door frame.
44. **MANTEL**—The facing about an open fireplace including the shelf.
45. **CEILING JOISTS**—See No. 47.
46. **STUDDING**—Vertical framework supporting walls, floors, and roof.
47. **JOISTS (FLOOR)**—A beam supporting floor or ceiling loads.
48. **RIBBON BOARD**—A longitudinal brace on the inside of the rafters and studding.
49. **GUTTER**—
50. **HANDRAIL**—The top of a balustrade.
51. **BALUSTRADE**—A series of balusters together with a supported handrail.
52. **NEWEL POST**—The post at the top or bottom of a stairway supporting the handrail.
53. **LEADER HEAD**—The top of a roof drain pipe.
54. **STAIR SOFFIT**—The under side of a stairway.
55. **WAINSCOTING**—The lower facing on walls or partitions.

56. **BASE BOARD**—A board skirting the walls of a room at the floor line.
57. **GIRDER**—A structural member supported at both ends and designed to carry loads.
57. **BEAM**—A structural member supported at both ends and designed to carry loads.
58. **BEARING PLATE**—A metal plate upon which structural members rest.
59. **COLUMN**—A vertical structural member designed to carry loads.
60. **BED PLATE**—A metal plate supporting structural members.
61. **JOIST**—See No. 47.
62. **PARTITION**—A dividing wall between two rooms.
63. **LATH**—The base used for plastered walls.

ADDITIONAL NOMENCLATURE NOT GIVEN IN PICTURE

- ALCOVE**—A recessed room connected with a main or larger room.
- ANCHOR**—An iron bolt embedded in the foundation, by means of which the superstructure is held rigid to the foundation.
- APRON**—The inside wood trim of a window underneath the sill.
- ARCH**—A convexly curved vertical span of steel, concrete, stone, or wood.
- AREAWAY**—An open space within a building.
- ASBESTOS**—A non-burning mineral compound used for insulating and fire-resisting purposes.
- ASHLAR**—Cut stone laid in regular or even courses.
- ATTIC**—That part of a building between the top floor ceiling and the roof.
- BASEMENT**—That part of a building below the first or ground floor which is better lighted and finished than a cellar.
- BATTEN**—A flat narrow strip of wood used for finishing and paneling purposes, usually placed over seams.
- BATTER**—The vertically inclined slope of a wall or pier generally expressed as being so many inches horizontal to so many inches vertical.
- BAY**—Area between two roof trusses or beams and columns.
- BAY WINDOW**—A projection of windows from the main wall of a building.
- BEAM CEILING**—A ceiling having projections representing beams.
- BELT COURSE**—A course of stone, brick, or terra cotta projecting from the main wall of a building, generally on the line of the sills.
- BEVEL**—A surface cut at an angle greater or less than 90 degrees.
- BOND**—(1) The joining of two or more structural members.
2. The method used in laying up brick.
- BRACE**—A connection between structural members made to strengthen the structure.
- BRACKET**—A projection from a wall designed to support loads.
- BULKHEAD**—An enclosed platform beneath the show window of a store room used for display purposes.
- BUTTRESS**—A projection built against a wall to resist lateral thrust of roof loads.
- CAISSON**—A large and strong water-tight box or casing in which work is conducted below water level.
- CABINET**—An interior enclosed space containing shelves and drawers.
- CASING**—The wood or metal exterior or interior trim around door or window openings.
- CELOTEX**—A manufactured insulating lumber made of cane fiber, in flat sheets.
- CEILING**—A grooved finishing lumber.

- CONDUIT**—A pipe or a tunnel used to enclose electric wires, water pipes, steam pipes, etc.
- COPING**—The top capping or covering of a wall.
- CORRIDOR**—A wide gallery or passageway in a building.
- COURSE**—A horizontal continuous layer of brick, stone, or terra cotta in a building.
- COURT**—An interior open space surrounded on three or four sides by building walls.
- DEADENING**—The application of insulating materials in a building to reduce the effect of transmitted sounds.
- DIMENSION SHINGLES**—Shingles made in uniform sizes.
- DOME**—A semi-spherical or inverted cup-shaped roof.
- DOUBLE ACTING DOOR**—A door which swings both ways from a closed position.
- DOWEL**—A small piece of steel used to bond one structural member to another.
- DUMB WAITER**—A small box elevator used for conveying materials from one floor to another.
- EAVE**—That part of the roof projecting over the exterior walls.
- FIREWALL**—An interior wall constructed of fire-resisting material for the purpose of preventing the spread of fire.
- FLAT ROOF**—A roof having a slope just sufficient to provide for proper drainage.
- FRENCH DOORS**—A pair of doors having a number of small glass window lights.
- GABLE ROOF**—A roof of inverted V section.
- GALLERY**—(1) A long passageway overlooking another part of the building or a court outside.
(2) The seating part of an auditorium directly under the roof.
- GAMBREL ROOF**—A gable type roof with its slope broken, making two distinct pitches.
- GROUND**—Strips of wood embedded in the brick or concrete work for supporting the wood finish.
- GROUT**—A mixture of cement and fine sand of a consistency that will easily pour, used for filling cavities in concrete work.
- HALF STORY**—That portion of a house directly under the pitched roof having a finished floor and sidewalls at least 4 feet high and finished ceilings is called a half story.
- HATCHWAY OR SCUTTLE**—A trap door through the ceiling used for entrance into the attic.
- INCINERATOR**—A device used for burning refuse.
- INSULATOR**—A poor conductor of heat, cold, or electricity.
- KELLSTONE**—An exterior stucco finish having a magnesite base and a crushed rock finish.
- LAUNDRY CHUTE**—A chute connecting the upper floors with the basement and used for conveying laundry.
- LAVATORY**—(1) A wash bowl.
(2) A wash room complete with toilets.
- LEAN-TO ROOF**—A sloping roof supported on one side by the wall of an adjacent building.
- LEDGE**—A horizontal projection over the main wall of a building.
- LIGHT**—A pane of glass in a window or door.
- LOBBY**—A public meeting place at the entrance to a theater, office building, or hotel.
- LOUVRE**—A slatted ventilator pitched to keep out rain or snow.
- MANSARD ROOF**—A roof having the same pitch on all four sides and a flat top.
- MEZZANINE**—A low story between two floors of a building, especially between the first and second floors.
- MILLWORK**—All doors, windows, framing, trims, etc., used in a building.

- NOISING**—That part of a stairway which projects out from the riser.
- PARAPET**—A low wall along the edge of the roof.
- PARQUET**—That part of the floor of a theater immediately behind the orchestra pit.
- PARTY WALL**—A common wall supporting floor and roof loads of two adjacent buildings.
- PEBBLE DASH**—A rough surface wall finish.
- PENT HOUSE**—A small addition built on the roof of a building to house the elevator machinery or water tanks.
- PEW**—A long continuous seat in a church auditorium.
- PICTURE MOLD**—A molding placed on the walls of a room from which pictures may be hung.
- PIER**—A foundation for supporting heavy loads.
- PILE**—A structural member driven into the ground for the purpose of supporting loads.
- PIN**—A wood or metal connection between two structural members.
- PITCH**—The slope of a roof computed by dividing the center rise by the span.
- PLATE RAIL**—A narrow shelf used for supporting dishes, etc.
- POST**—A vertical support for carrying loads.
- RAIL**—The horizontal framework in a door frame.
- RAILING**—The top member of a balustrade.
- RAMP**—An inclined runway from one floor to another.
- REINFORCED CONCRETE**—Concrete with bars of steel embedded to take the tensile stresses.
- RISER**—The vertical part of a stair back of the tread.
- RUBBLE MASONRY**—Masonry laid without respect to uniformity of courses and joints.
- SAND FINISH**—A wall surface finished with fine sand.
- SASH**—The framework which holds the glass in a window or door. It may be glazed or unglazed.
- SCRATCH COAT**—The first coat of plastering applied to a wall.
- SHEETROCK**—A flat sheet having a gypsum base faced with paper.
- SLEEPER**—A wooden wall support resting upon the building floor.
- SKYLIGHT**—A glassed opening in the roof.
- SPAN**—The horizontal distance between supports.
- SPECIFICATIONS**—A written description of the various parts of a building.
- SPRINKLER SYSTEM**—A pipe and nozzle installation which sprays water automatically in case of fire.
- STEEPLE**—A pointed vertical member in a door or window frame.
- STILE**—The vertical member in a door or window frame.
- STORM SASH**—A light closed door outside the main entrance door to a building.
- STOOL**—That part of the interior window frame which projects in from the window and rests on the apron.
- STRAP**—A band iron connecting two pieces of wood and bolted to same.
- STUCCO**—An exterior cement or plaster wall finish.
- SUB-STRUCTURE**—That part of the building below the top of the foundation.
- SUPERSTRUCTURE**—That part of the building above the foundation.
- TERRA COTTA**—A molded and burned clay material used for facing and trim.
- TIE**—A connection between two or more structural members.

TILE—A molded and burned clay or cement material used for flooring facing walls and trim.

TOWER—A tall structure extending upward from the main building.

TRAP DOOR—A door set flush with the floor or ceiling.

TREAD—The horizontal width of a step between risers in a stairway.

TRELLIS—An artistic arrangement of narrow strips of wood.

TRIM—The finish of a room or building which varies in color or texture with the main part of the room or building.

TRUSS—A combination of struc-

tural members which carries loads and is supported at both ends.

TURRET—A small tower projecting from the main walls of a building.

VAULT—(1) An arched ceiling.
(2) A strong enclosure.

VESTIBULE—A small hall at the entrance of a building.

WALL BED—A bed concealed in the wall when not in use.

WALL BOARD—A manufactured fibrous material formed in sheets and used for facing walls and ceilings.

WING—A building projecting out from the main building.

Appendix B

CONSTRUCTION REQUIREMENTS

Premature depreciation and obsolescence can in the majority of cases be traced to poor construction; the fault does not always lie with the materials used. It is of great importance that the inspector or appraiser be able to detect faulty construction and inferior materials and make a report of those conditions in his findings.

Foundations

Foundations vary according to the super-structure they are required to carry and consequently as the walls increase in height, the foundation walls are thicker and footings wider and deeper to carry the load.

The foundation walls should be 2 inches greater in thickness than the lower story of the wall it is required to carry, and the footings should be at least twice the thickness of the foundation wall. If there is any question about the footings being set on hardpan, the footings should be reinforced with steel rods. Steel reinforcing should be used on all buildings of 2½ stories or more, regardless of soil.

Poured concrete exceeds all other types of construction for this part of the building. On a finished building the inspector can see only one surface of the wall and his deduction of the class of workmanship will have to be made from the visible surface. A plumb wall means that foundations have been carefully erected, and that the wall is of uniform thickness. An uneven finish or air space in the surface means improper tamping and, therefore, a wall without full bearing strength.

Spreaders left in the wall cause leaky basements and sometimes bad cracking. In frame construction the proper placing of anchor bolts embedded in the concrete is essential to good workmanship; it holds the timber in place and prevents shifting of the super-structure caused by either shrinkage of the timber or wind pressure.

Concrete block foundations. Cheap work can be detected by insufficient mortar in the joints, causing a poor bond, or by the wall being out of plumb.

Basement floors should not only be surfaced with a good mixture of concrete, but also should be smooth and well drained.

Brick Walls

The reference to walls in the following rules apply to walls of burned clay brick, unless otherwise stated. For masonry walls of other construction, see Modifications.

Definitions

BEARING WALL—A wall which supports any load in addition to its own weight.

NON-BEARING WALL—A wall which supports no load other than its own weight.

CURTAIN WALL—A non-bearing wall between columns or supports which is not supported at each story by beams or girders.

PANEL WALL—A non-bearing wall in a skeleton structure supported at each story by beams and girders.

THICKNESS OF WALLS—In considering the safety factor for the required thickness of walls, the occupancy of the building is the determining factor. It may be divided into two classifications.

Light Occupancy—Those buildings used for residential purposes.

Heavy Occupancy—Those buildings used for retail or manufacturing purposes.

Minimum Thickness

Stories		— Stories —					
		1st	2nd	3rd	4th	5th	6th
1	Light Heavy	8-in. 12-in.					
2	Light Heavy	12-in. 16-in.	8-in. 12-in.				
3	Light Heavy	12-in. 16-in.	12-in. 16-in.	8-in. 12-in.			
4	Light Heavy	16-in. 20-in.	12-in. 16-in.	12-in. 16-in.	8-in. 12-in.		
5	Light Heavy	16-in. 20-in.	16-in. 20-in.	12-in. 16-in.	12-in. 16-in.	8-in. 12-in.	
6	Light Heavy	20-in. 24-in.	16-in. 20-in.	16-in. 20-in.	12-in. 16-in.	12-in. 16-in.	8-in. 12-in.

Modifications

Reinforced Concrete Walls—Thickness should be not less than two-thirds of that specified for brick walls.

Stone or Concrete Walls (Not Reinforced)—Thickness should be 4 inches greater than that specified for brick walls.

Hollow Concrete Block or Tile Walls or Hollow Walls of Block Construction—Thickness should be 4 inches greater than that specified for brick walls. If faced on both sides with 4-in. brick to be considered equivalent of brick.

Hollow Brick and Sand Lime Brick Walls—Thickness should be same as that specified for brick walls.

Concrete Brick Walls (size $2\frac{1}{2} \times 4 \times 8$)—Thickness should be 4 inches greater than that specified for brick walls.

A non-bearing wall in a heavy occupancy building has the same requirements as for light occupancy.

A panel or curtain wall should be at least 12 inches in thickness on all floors.

Stucco Walls

Stucco is the designation commonly applied to plaster coating on exterior walls of buildings. A stucco mortar is composed of portland cement, sand and water, to make a plastic mass. Other materials are often added to increase the plastic and spreading qualities of the mortar, also to increase the water-proofness of the mortar. The colors are formed by adding various pigments to mortar. Variation in these mixtures is often the cause of defective stucco, due to the weakening effect on the cement.

Stucco may be applied to brick, tile, or concrete walls directly as well as to its usual supporting base, wood or metal lath. The most dependable base is metal lath. Stucco may be varied in its appearance by the manipulation of the final finish as follows:

- Float finish.....A rough even texture.
- Spatter dashA rough texture.
- StippleA surface which has been roughened
after the finished coat has been applied.

Stucco as we know it has come into general use only in the last few years, and in some quarters has earned an evil reputation which is hard to live down. Failure of this material may be attributed to:

1. Faulty workmanship or material.
2. Insufficient thickness of outside surface.
3. Improper base on which surface is applied.

Among some of the indications of poor workmanship is crazing, an indication of insufficient thickness of material. Cracking of surface indicates faulty base construction. Poor surface finish indicates faulty application of the finish coat.

Frame Walls

1. BEARING PLATES—to be at least 2-in.x6-in. all No. 1 fir, west coast hemlock or yellow pine.
2. STUDDING—to be at least 2-in.x4-in., same material as above and spaced not more than 16-in. on center; double studs around all openings.
3. BASE PLATES—to be installed only after sub-flooring has been laid, of same dimensions as studding.
4. TOP PLATES—to be double 2-in.x4-in. studding securely nailed.
5. CORNER STUDS—at least three 2-in.x4-in. studs to be used on all corners.
6. OUTSIDE WALL SHEATHING—to be 1-in.x8-in. or 1-in.x10-in. widths, double nailed at all studs; to be at least No. 2 fir, west coast hemlock or yellow pine. Tongued and grooved or shiplap.
7. PAPER INSULATORS—to be heavy water-proof type.
8. SHINGLES—to be either cedar or cypress (a) 24-in. heavy type, to be laid not to exceed 10-in. to the weather. (b) 18-in. medium type to be laid not to exceed 8½-in. to the weath. (c) 16-in. light type to be laid not to exceed 7½-in. to the weather.
9. COLONIAL OR DROP SIDING—to be cypress or California red wood, joints to overlap at least 1½-in., securely nailed every 10-in. to 12-in., all nails to be countersunk and holes filled. (a) 8-in. siding to be at least ½-in. thick at butts. (b) 10-in. siding to be at least ¾-in. thick at butts. (c) 12-in. siding to be at least 1-in. thick at butts.

Veneer Walls

Veneering on frame construction should be tied to the base wall by galvanized corrugated ties, or other approved fastening, one to each square foot of surface. The ties should be spiked or secured to the backing by heavy nails and such fastenings pulled directly in line with the joists. The top fastening should be thoroughly clean before the veneer work is started. All brickwork below the ground surface should be laid in cement mortar. Above the ground surface cement lime mortar may be used. This mortar must be mixed in small batches which can be used in two hours time from the adding of the portland cement and no retempering should be allowed. Where face brick is backed up with common brick or tile, see Brick Wall Requirements.

Structural Framing

The framework may be called the backbone of the building. No matter how good a surface material has been used, deficiency in the structural framing will cause immediate obsolescence of the entire building.

BEAMS AND COLUMNS—In residential work and small apartment buildings, beams and columns usually do not extend above the first floor level. The most common practice is to use an 8-in. to 10-in. I-beam extending from bearing wall to bearing wall, and supported at intervals of 10-ft. to 12-ft. between wall by cast iron columns. Wood beams have been used

extensively in older constructions and in these cases beams should be built-up and not a solid beam. This is done by spiking three or four joists together. They should run continuously from wall to wall. Wood columns are satisfactory providing they are of sufficient strength and are provided with plates, resting on concrete. Wood columns should be at least 8-in. square and base raised at least 3-in. above basement floor to avoid moisture. Wrought iron or steel pipes used as columns should be filled with concrete, and cast iron bearing plates used at both ends.

JOISTS—The size of joists depends on distance between supports and the assumed load per square foot (40 to 50 pounds).

No. 1 Common Lumber—

2-in.x 8-in.—16-in. on center, span not to exceed 11-ft. 0-in.

2-in.x10-in.—16-in. on center, span not to exceed 13-ft. 0-in.

2-in.x12-in.—16-in. on center, span not to exceed 16-ft. 0-in.

2-in.x14-in.—16-in. on center, span not to exceed 20-ft. 0-in.

No. 2 Common Lumber—

2-in.x10-in.—16-in. on center, span not to exceed 11-ft. 0-in.

2-in.x12-in.—16-in. on center, span not to exceed 13-ft. 0-in.

2-in.x12-in.—12-in. on center, span not to exceed 14-ft. 0-in.

2-in.x14-in.—12-in. on center, span not to exceed 16-ft. 0-in.

BRIDGING—Wood joists should be bridged every 8-ft. in their length with cross braces cut to fit snug, and securely nailed at both top and bottom; double joists to be used under all partition walls and around all floor openings.

Interior Framing

JOIST BEVELS—In brick buildings, where wooden joists are embedded in brick walls, joists should be cut on a bevel so that in case of fire, and the joist burning through, the weight of the joist will not pull the wall down.

WALL ANCHORS—To prevent the brick walls from spreading outward where they support wood floor joists, the ends should be provided with anchors embedded in the masonry.

STEEL BEAM BEARING—Where the ends of steel floor beams are supported on a brick wall, the walls should be held against spreading by anchors, as for wood joists.

BEARING PLATES—The load supported by steel beams is such that a very heavy pressure is often brought upon the masonry supporting the beam. This pressure may exceed the safety factor allowed for masonry; therefore, bearing plates of steel or cast iron must be placed under the beam, of sufficient size to reduce the pressure per square inch. A plate having a width greater than the bear by four inches or more is usually required.

PARTITIONS—Inside partitions of the average residence and small apartment building constitutes the structural frame above the first floor and carry the upper floors. Make sure there is sufficient bearing on the first floor level to carry the super-structure, with double joists under all partitions. Studding should be placed not over 16-in. on center. Double studding should be used around all doors and other openings, with heavy lintel above. Wide openings should have diagonal braces above, like a bridge truss, to keep the wall over the opening from settling. This prevents the binding of doors or cracking of plaster.

Floors

Satisfactory finished floors may be had in various kinds and quantities of materials, although wood is the most commonly used. The most beautiful and durable are the clear grain, quarter-sawed hardwoods.

OAK—clear white oak quarter-sawed is probably the highest type of floor obtainable. Strips should be carefully matched as to grain and color. Although plain sawed material is durable and attractive, the quarter sawed have a higher wear resistance and less shrinkage. No. 1 grading as used in cost factors is for plain material; add 10 percent if quarter sawed. Red oak is a lower priced material and is usually found in medium priced houses; treat as No. 2 grade oak.

MAPLE—Is probably the hardest and toughest wood in popular use for flooring. Treat as No. 2 grade oak.

BEECH OR BIRCH—Both make excellent floors if properly finished. Treat as No. 2 oak.

PINE OR FIR—Quarter sawed, edge grain or vertical grain, southern yellow pine or Douglas fir are two popular choices which will last as long as the building, although classed as soft woods. If the soft woods are plain sawed, they are liable to sliver and are not very satisfactory where subject to excessive wear.

LAYING—Finished flooring should not be laid until plaster is thoroughly dried. Check surface as to its levelness and smoothness. Floor squeaks or deflection in weight are an indication of lack of sub-flooring or insufficient strength of joists.

NAILING—All flooring should be tongued and grooved, and blind nailed along the tongue. Edges of the strip should not be marred. Top nailing is an indication of thin flooring. $\frac{3}{8}$ -in. stock flooring is satisfactory for remodeled jobs when laid over old flooring.

Roof Construction

RAFTERS—to be spaced not over 16-in. on center and should be at least No. 1 Common yellow pine. Rafters should be notched over and strongly spiked to the side wall plates over the studs. With masonry walls this plate should be fastened to the walls by means of anchor bolts embedded securely in the masonry.

OUTSIDE SHEATHING—should be carried up to the top of rafters to make a light joint with outside roofing boards.

FIRE STOPS—must be inserted between studs to shut off drafts and prevent rapid spread of fire.

ROOF SHEATHING—should be of a grade of lumber equal to that used for sub-flooring, at least No. 2 Common yellow pine. Shingle roofs are often laid on shingle lath, strips 1-in.x3-in. spaced several inches apart, instead of solid sheathing, to provide better ventilation, but solid sheathing gives better fire resistance and more insulation.

SLOPE—of roof should be at least 1 to 2, or $\frac{1}{2}$ pitch for shingle. For tile or slate a slightly steeper pitch should be used. For sheet metal work a flat roof with enough slope to take off drainage is permissible.

FLASHING—of rust-proof material should be used around the chimneys, at vent pipes, skylights and along the valleys. Careless work will usually show up in such places. The sheet metal flashing should extend far enough under the shingles or other roofing to prevent water backing up over the top of flashing.

Roof Materials

COMPOSITION SHINGLES—(asphalt shingles) are widely used in many localities. They are manufactured by many firms and come in many sizes and shapes, but are graded according to the weight per square of material. The roof to receive this material should be tightly sheathed. If strip sheathing or lath is used, the material will curl or sag in hot weather, causing leaks.

On very cheap grades of construction an imitation shingle roll roofing may be found. Whatever kind of roofing may be used, make sure that non-corrosive nails have been used, and the work is neat in appearance, with no warped or curled shingles and that all gutters and ridges are properly flashed.

WOOD SHINGLE ROOFS—of the best types are laid with edge grain shingles of western red cedar, cypress or redwood. Staining or dipping in creosote gives them greater weather resistance. Shingles come in either 14-in., 16-in., 18-in. or 24-in. lengths. Normally, 14-in. and 16-in. shingle is laid 4½-in. to 5-in. to the weather; 18-in. length 5½-in. to the weather, and 24-in. length 7½-in. to the weather. Greater exposure results in thinner and less enduring roofs.

At the eaves, where the shingles begin, the first course should be two-ply. They should be loosely spaced to allow for swelling; joints should be broken or staggered so as not to occur directly above each other.

Nailing is of great importance. Rust-proof nails of either cement coated, zinc coated, zinc or copper should only be used, with not more than two nails to a shingle. No nails should be exposed or visible. Nail heads should not be driven into the shingles so as to destroy the wood fibers, as this invites decay.

Exposure of nails, rusted nails, loose or curled shingles, and flat grain shingles are all evidence of weakness.

SLATE ROOFS—should be laid on heavy felt over a lightly sheathed roof surface. Surface should be perfectly flat. Over the entire area, the third course of slate should lap over the first course at least 3 inches; for example, an 18-in. slate should be exposed 5-in. to the weather. Vertical joints should have a lap of 3-in. over the joint of the slate below. Due to the weight of this type of material, heavier roof joists are required than those used in wood, composition or metal roofs.

Note broken or cracked slates. Any light gray, diagonal lines across the slate should be viewed with suspicion. If slate is soft or crumbling the slates are inferior.

Examine roof for raised spots as they are an indication of nails working up from the sub-surface. Small pieces of metal between slates indicate roof has undergone repairs.

TILE ROOFS—should also be laid on a heavy felt base over a tightly sheathed roof surface. Many different styles and colors are available in either burned clay tile or concrete tile. Check roof for cracked, loose or broken tile and irregular courses, and make sure that adequate non-corrosive flashing and nails have been used to keep water away from the wood underneath.

ASBESTOS SHINGLES—made of asbestos fiber and a high percentage of Portland cement compressed under heavy pressure. This material is practically indestructible. It may be laid either in hexagonal design or American method. It comes in many colors and sizes. The same care in laying is required as in either slate or tile roofs.

It must be remembered in inspecting a roof that the surface is no better than its component elements; that is to say, if cheap gutters, valleys or flashing have been used, they will rot out before the roof does and require considerable expense for repair, due to the necessity of tearing up the roofing surface.

Lath and Plaster

LATH—Three general types of lath are in use, wood lath, metal lath and plaster boards; also insulation boards which are used as lath substitutes. Each type has certain advantages and each type if applied under proper limitations as to quality of material and workmanship, will produce a satisfactory inside wall.

On stud partitions, the lath is nailed directly to the studs. In first-class wood lath jobs, laths 1-in. wide and 48-in. long are used, as it lessens the possibilities of buckling and keeps the plaster from cracking. Spacing between laths should be $\frac{3}{8}$ -in. (no more, no less) for a plaster key. In cheaper types of work laths $1\frac{1}{2}$ -in. wide by 32-in. long will be found.

In good work, all corners will be reinforced with metal lath or metal corner beads, and at least a three coat plaster job, the final finish to be at least $\frac{3}{4}$ -in. thick. In masonry walls furring or nailing strips are usually nailed to walls and the lath is then nailed to these strips and plaster applied as before.

PLASTER BOARD—is used extensively instead of wood lath, as it can be nailed directly to the wood studding, and requires only two coats of plaster. Plaster board is made in two thicknesses, $\frac{1}{4}$ -in. or standard plaster board, weighing $1\frac{1}{2}$ pounds per square foot, and $\frac{1}{2}$ -in. thick weighing $2\frac{1}{2}$ pounds per square foot. In nailing, nails should be spaced 4-in. to 5-in. apart, using nails at least $1\frac{1}{4}$ -in. long of 11 $\frac{1}{2}$ gauge with 7/16-in. head. All studding to be at least 16-in. on center.

METAL LATH—comes in many designs and patterns, but for plaster work this is immaterial. Lath should be copper coated or a good grade of galvanizing. Requirements of nailing are similar to plaster board; also all corners should be reinforced as indicated before.

PLASTER—Good plastering results from proper lath and plaster and skilled workmanship, combined with the adequate framing with well seasoned dry lumber.

In newly built houses you seldom see plaster cracks. It takes time, usually, for them to develop. In a house a year or more old, diagonal cracks over doors or windows, or cracks extending from corners indicate poor forming or settling of foundation, or unequal shrinkage between outside wall and interior partitions.

Miscellaneous random plaster cracks mean poor plaster or lath or inferior workmanship.

In a new building, lath outlines through plaster mean thin skimmed plaster.

Wall surface should be smooth and flat without valleys or hills. Joints between trim and plaster should be tight. Chalky or light colored spots, especially over doors and windows, indicate dryouts where water in the plaster evaporated before the plaster set; this plaster is soft and subject to cracks.

A sandy appearance, from which loose sand can be brushed off, indicates plaster is oversanded, weak and easily destroyed.

A crinkled or grazed surface indicates too much lime and its only remedy is removal.

Millwork

TRIM—That is, the woodwork around doors and windows, paneling, mouldings, staircases and similar features. It may be painted or stained, or finished in a natural grain. Most woods are more attractive in their natural grain than finished to imitate a more expensive grain.

Different woods in different grades lend themselves to diverse treatments, but there must be harmony in the relation of the trim and woodwork to the flooring and to the room as a unit, as lack of harmony is one of the causes of obsolescence. Narrow trim is popular today, because it is neat looking and is also more economical. Good installation requires that there should be no open joints, hammer marks, warped pieces or signs of nailing. Mitered corners are often used on door and window trims. Tight joints are an indication of careful workmanship.

Baseboards should be fitted snugly against the floor and the wall at all joints. Walls should be plastered behind the baseboards. To avoid

cracks between baseboards and flooring, good builders will stop the finished floor at the inner face of the base mould, nailing the shoe mould direct to the sub-flooring; then even if the baseboards should shrink, it will not pull the shoe mould away from the floor, nor will any shrinkage of the finished floor pull the moulding away from the base mould.

DOORS—Doors should swing freely and close tightly without sticking. Sizes of door openings should be in keeping with standard practice. Outside doors should be at least 1 $\frac{3}{4}$ -in. thick, as they are subject to the severe test of cold and rain. Inside doors are usually 1 $\frac{3}{8}$ -in. Hardwood as well as softwood doors consist of veneer over both sides of a softwood core. Water-proof glues have been so perfected that veneer is quite satisfactory for either interior or exterior doors. Failure of veneer work is usually traceable to neglect of contractor in priming either the top or bottom edge of doors thoroughly with oil. No wood patches or wedges should be present in the door surface as it indicates a second grade door.

Doors may be paneled or solid. In paneled doors large panels should be built up of three or five-ply veneer, glued together; small panels may be solid. Doors may be paneled in a number of ways, the five-panel type being the most popular and least expensive. Examine joints for neatness and workmanship.

Glazed doors should be inspected for tightness of glass and the means by which it is secured. The glass should be set in putty, and in a veneer exterior door a bevel strip should be placed along the lower edge of the opening before it is glazed, to make a water shed for veneer and core.

WINDOWS—Should be given consideration with regard to appearance, light, wall space and ventilation. Exposed portions of frame and sash should be hardwood (such durable species as red cypress, or southern pine, redwood, edge grained Douglas fir or genuine white pine) although other less durable woods may be used. Most commercial mills of today make sash of good water-tight construction. Poorly fitted windows are usually due to poor assembling by the contractor.

With wood sash, examine window sills and sash for any signs of decay. If steel sash are used, check over carefully for signs of rust or bent window frames which admit draft. Consideration should be given to the kind of glazing; also inspect the putty to see that it holds the glass and is applied neatly and thoroughly around the pane and is painted.

Gutters and Flashing

Provision for carrying rain water and melting snow from the roof of the house to the ground without damage to the house or its foundation deserves special attention.

Rust-proof gutters, without sag, should be placed at all eaves; downspouts, preferably of copper, zinc, or aluminum, should extend to the ground where they should be cemented into an upright cast-iron or glazed-clay pipe protruding above the ground, and thence should drain into the sewer.

If down spouts are not connected to a drainage system, they should have a curved elbow at the bottom and discharge onto a flat stone or slab. This will prevent the ground from being washed out, and will help to keep water away from the foundation wall. There should be strainers over the inlets from the gutters to the downspouts, to keep leaves and other material from clogging up the pipe. Straps and fittings which hold the down spouts in place should also be of non-rusting metal. Iron which has been painted to resemble copper or bronze can be detected with a magnet which will not "pull" on zinc or copper, or other non-ferrous metals.

In frame construction, above each window is a joint between the outside trim and the wall, which should be "flashed" or protected by a sheet of copper or other non-corrosive metal. Window frames in masonry walls should be well caulked to stop up all air spaces between the frame and the wall. Unfortunately, this is not a very common practice.

Hardware

Finished hardware comprises such articles as door handles, locks, bolts, hinges, window lifts and pulleys and shutter fasteners. They are usually of cast iron, wrought iron, steel, cast or wrought brass or bronze. The last two metals are copper alloys. The copper alloy is sometimes used in high-grade work, because its high nickel content produces a bright, attractive white finish.

Plated iron or steel hardware which closely resembles solid bronze or brass is used in cheaper types of construction. Plated hardware of good quality may be satisfactory when cost is a prime factor, for interior doors, hinges and other places not subject to hard usage or to dampness; on door knobs and surrounding plates or escutcheons, plating soon wears off by usage.

The hardware should blend smoothly with the architectural design and interior finish.

The best grades of hardware may be spoiled by improper installation. Doors should swing smoothly and latch freely. Main entrance doors should have tumbler locks. Bathrooms should be equipped with bronze or brass hardware with nickel or chromium finish or other alloys having rust-proof qualities.

Exterior doors should be hung with three butts; two butts are sufficient on interior doors. Stops should be provided where necessary.

Properly hung windows work freely on their own weights and top of sash should be easily drawn together by the fastener. Casement windows in pairs should have a bolt at both top and bottom.

Stairways

The stairway is the largest single item of interior woodwork in the average two-story home. It usually occupies a prominent position and it is important that the design be good, harmonizing with the rest of the interior construction. Great size is not essential to strength and durability. The strength of the stair is the result of the way in which the parts are put together, rather than to their size.

Treads should be made of at least 1½-in. stock, tongued and grooved and glued up to avoid checking. Turned newels and stair rail should also be made of glued-up stock. Balusters may be made of solid material. Risers should be ¾-in. thick and made similar to treads.

The details in inspecting the stairways are as essential as for the rest of the building.

Is it easy to walk up and down? The size of the treads and risers are more or less standard, but here and there a staircase has been squeezed into a space that is entirely too small, spoiling not only the architectural effect but the efficiency.

Is it squeaky? Is the railing secure? Shake it; look carefully at the bottom where the baluster is framed into the steps. Are the balusters simply toenailed so that they are bound to work loose, or are they carefully and firmly mortised or dovetailed into a hole in the step? Do the steps bend under your weight? If so, the builder probably saved a few dollars by leaving out the center string (support along the center of the stairway). Is there plenty of clearance overhead for a tall person to descend the stairs with safety? Does the wood in the stairway match that in the floor? A decided contrast might add a decorative tone, whereas merely an approximate matching of color and grain might create a perpetual discord.

Basement stairs, unfortunately, are slighted in many well-built houses. Some stairs seem to remain standing through their own will power and casual help of a few nails. This is often the case where the stairs turn at a landing. There should be a post underneath, at the corner. Equally important is a handrailing, nailed securely and braced.

The stair string on which the treads rest should not be embedded in the concrete floor, as dampness or moisture in the concrete may cause the ends of the strings to rot.

If stairway is against a wall, check up on how it is supported. In the basement as elsewhere, the character of the workmanship should give an indication of how well the building has been constructed.

Fireplaces

Careful inspection should be made of the fireplace. The hearth should be constructed of concrete, brick, stone or tile and should extend outward at least 20 inches from the face of the chimney breast or front of the fireplace and be at least 24 inches longer than the fireplace opening.

No wooden mantel or other woodwork should be placed within 8 inches of the side or top of the fireplace opening. The back of the fireplace and the "cheeks" or sides should be beveled to throw the heat into the room and also to lead the smoke up into the throat, in which there should be an adjustable iron damper. The area of the throat should be at least as large as the flue area. Above and back of the throat and at the bottom of the flue opening there should be a flat shelf, to check down drafts on windy days. The flue area should be at least one-twelfth of the area of the fireplace opening. The flue lining should extend all the way up the chimney, with joints tightly sealed with mortar.

Chimneys

Chimneys shall be built upon concrete or masonry foundations, properly proportioned to carry the weight imposed without danger of settling or cracking.

All spaces between chimney and wooden joists or beams shall be filled with loose cinders, loose mortar refuse, gypsum block, or other porous incombustible materials, to form a fire stop.

The incombustible material shall be supported by strips of sheet metal or metal lath set into the brickwork and nailed to the wooden beams, forming a buckled flexible joint between, or by similar strips of metal nailed to the wood-work with the inner edge close to the chimney.

No wooden studding, furring, lathing, or plugging shall be placed against any chimney or in the joints thereof. Wooden construction shall either be set away from the chimney, or the plastering shall be directly on the masonry or on metal lathing or on incombustible furring material. Wood furring strips, placed around chimneys to support base or other trim, shall be insulated from the masonry by asbestos paper, at least $\frac{1}{8}$ -in. thick, and metal wall plugs or approved incombustible nail-holding devices attached to the wall surface shall be used for nailing.

Materials for Plumbing Fixtures

The materials used in the manufacture of plumbing fixtures are as follows:

1. Enameled iron, the most economical material for the manufacture of plumbing fixtures. It is best adapted for bath tubs, where its light weight makes it unnecessary to have a specially constructed floor to support it. Then, too, iron is a good conductor of heat and warms through easily. It has the disadvantage, however, of chipping easily if it is struck a sharp blow.

2. Vitreous china is best adapted to the manufacture of lavatories and water-closets. It is impervious and non-absorbent, will not stain, and will not chip as easily as enameled iron. It is too heavy to be used in the manufacture of bath tubs, however, as it would be necessary to increase the supporting framework of the floor to stand the additional load. Then, too, in a fixture as large as a bath tub it would be impossible to get a

straight enough piece of china because of the warping caused by the terrific heat occurring during firing. Moreover, a vitreous china fixture costs approximately three-fourths again as much as a similar fixture of enameled iron.

3. Porcelain was formerly used extensively for plumbing fixtures, but has lost most of its popularity because it crazes and is very absorbent once its glaze has been broken. It is heavy and when used for bath tubs needs a strong floor to support it. Also, it remains cold to the touch for a long time. Therefore, it should not be used by any one desiring the utmost in cleanliness, appearance and comfort.

Waterclosets

Water-closets may be classified into the following general classifications:

1. Siphon jet bowls have one or two jets which set up a siphon action in the bowl, thus drawing the contents of the bowl out and on into the waste line. In addition, water is supplied through a flushing rim which scours the interior surfaces of the fixture. This type has a very large water area and there is a minimum of fouling surface. It is also quiet in operation.

2. Wash-down or reverse-trap bowls receive all water through the flushing rim, depending on their action for an accumulating head of water in the bowl, until the head becomes great enough to force the contents over the dam and into the waste line. This bowl has a greater fouling surface than those of the siphon jet type and is also noisy. It is less costly than the siphon jet bowl.

3. Blow-out bowls depend for action on a sudden discharge of water under high pressure. Very positive in action, but noisy, they can be used only in conjunction with a flush valve and are for the most part found only in public toilet rooms.

Water-closets may be flush-valve operated or they may be supplied with water from a 6 or 8-gallon tank. The valve combination is about one-third less expensive than the tank combination, but it makes it necessary to run at least a 1-in. water line to the closet. With a tank combination, a ½-in. line only is necessary.

Kitchen Fixtures

Kitchen sinks are made of the following materials:

1. Enameled iron, which is the least costly, lighter in weight than porcelain or china, durable, but subject to attack of acids found in fruits and vegetables.

2. Acid-resisting enameled iron, a special very hard enamel, costing approximately one-quarter more than ordinary enamel.

3. Solid porcelain which is heavy, subject to chipping and crazing and eight to ten times more costly than acid-resisting enamels.

4. Vitreous china, limited in use because of comparative cost.

5. Monel metal and stainless steel—the first an alloy of copper and nickel, the second of iron, chromium and nickel—which are somewhat expensive as yet, but satisfactory as to weight, acid resistance, appearance, and permanence.

Detecting and Classifying Second Grade Fixtures

In co-operation with the Department of Commerce, manufacturers of plumbing fixtures definitely mark their wares so that all second grade fixtures may be detected in the field after installation.

All good fixtures are graded as "regular selections"; fixtures with blemishes are known as "culls."

Vitreous china fixtures are made of materials mined from the earth

containing metallic elements and foreign matter which can not be entirely eliminated in practice. As they are made and finished and subjected to high degree of heat, it is an accepted fact that they can not be regularly produced free from unimportant variations and minor blemishes.

Careful inspection is maintained by the manufacturers of standard products and certain blemishes are permitted under the grading rules that do not affect the utility or value of the fixtures. These fixtures are known as the "regular selections."

The fixtures which do not stand the test of these inspections are marked and sold as culls. The culls may have excessive warpage, wavy finish, large blisters, dents, projections, exposed body, unglazed fire checks, dull or eggshell areas.

The life of a cull is very uncertain; they are sold in the market by cheap plumbing supply houses and usually not under the name of the manufacturer.

Vitreous china "culls" may be detected by the markings placed on them by the manufacturer, consisting of two parallel lines cut through the glaze into the body of the ware. These cuts are filled with a bright red varnish or enamel which is resistant to the action of hot water.

Porcelain fixtures are marked with two small dots cut through the glaze and filled with red ink or enamel at the location specified below.

Fixture	Location
Urinals	on the top behind inlet.
Lavatories	underneath of right side of bowl.
Sinks and trays.....	on front just above the right leg.
Receptors.....	on front at the right side.

All shipping crates containing culls are marked by the manufacturers with either dashes or dots with red paint before leaving factory.

Where culls are found in appraising a property deduct 50 percent from the prices given in the manual for all fixtures.

Wiring Methods

Knob and tube wiring employs single rubber-covered wire, the rubber covering of fibrous material braided into its surface. This wire is concealed between partitions and floors and is supported on porcelain knobs. Porcelain tubes are used where it is necessary to "tunnel" through wooden joists, beams or studding. The wires are kept separated from each other by at least 5 inches and are kept at least 1 inch away from the surface on which they are mounted. Where it is impossible to keep the wires separated by 5 inches, each wire is encased in an unbroken length of flexible tubing of fibrous material known as loom.

The *armored cable* assembly consists of a wound flexible metal cover over rubber insulated wire. This assembly is run from outlet to outlet in continuous lengths. The cable is fastened with straps similar to those used for water pipe, and when it is necessary for it to pass through wood joists, studs, etc., holes are bored in the center of the members, and the armored cable is placed directly through these holes. The armored covering of the assembly is both mechanically and electrically connected to all outlet boxes and furrings.

Conduit wiring involves the use of a specially made metal pipe coated on the inside and outside, exclusive of threads at joints, with zinc, enamel or combinations of both. In practice the entire assembly of conduit is built up in place and then the wire is drawn into it. Obviously any or all lengths of wire may be withdrawn from the conduit at any time and accordingly replaced. This method involves the use of a variety of fittings usually termed outlet boxes. These are placed flush with the plaster or the baseboards in the house. In turn they contain the necessary wall-switch mecha-

nisms and the receptacle part of the convenience-outlets, also the wire and supporting devices for lighting-fixtures.

Non-metallic sheathed cable involves the use of two conductors, each separately insulated with rubber and other insulating materials but contained in an outer sheathing of braided material. This assembly is also made up with a third wire, but in this type the third wire is for grounding purposes and does not carry individual insulation. The assembly of non-metallic sheathed cable is run from outlet to outlet in continuous lengths without joints or spliced in connections. The cable itself is fastened directly to wood joists, studs, etc., by means of metal straps similar to those used for supporting water pipe to joists and beams. Where grounding wire is required the encased ground wire is connected to the outlet boxes or fittings into which the cable is supplied and also to a suitable ground connection, thereby grounding all outlet boxes and fittings.

Surface metal raceways in houses are used primarily for making extensions along baseboards, ceilings, walls, etc., in older houses. Since it may not be concealed, with but few exceptions, its use would never be considered in new house construction. The materials coming under this classification for house wiring generally consist of a shallow metal channel with a second piece for a cover, the cover being driven on. It also takes on the form of rectangular or nearly rectangular shapes, either in one or two pieces. When made in two pieces with one of the pieces removable, it is possible to place the wires inside of the metal duct or raceway and then drive on the removable piece. With one-piece types the wires have to be pulled into it just as wire would be pulled into conduit. An extensive assortment of fittings, outlet boxes, etc., are made for the various makes of this class of material.

Electrical metallic tubing is similar to rigid metal conduit, and the details of its type and usage are quite similar to the latter. The chief difference between it and rigid metal conduit are found in its lesser wall thickness and its lack of pipe threads. Outlet boxes and fittings have been developed for its use.

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